AIR CONDITIONING & REFRIGERATION NEWS
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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Stories of the Week
Perfect Appointment!
Wanted: Manpower
Red Spotlight
Contractors Worried
Practical Ideas
Pregnant New Idea
Wanna Live Forever?

Stories of the Week

"Ladeez and gennemum," loud-speakered a rodeo announcer, "the next contestant will ride toward yonder red handkerchief on the ground and, still on his horse, pick it up with his teeth."

The stunt came a-cropper. Red bandanna lay still in the ring, and the crowd jeered. Following a whispered conference with the rodeo contestant, Mr. Announcer blared:

"And now he will ride back and pick up . . . his teeth."

Walking toward his parked car Alfie Jones agonizedly watched somebody drive it away. Alfie phoned police.

"Somebody just stole my car! But I got his license number."

Perfect Appointment!

Scovill Mfg. Co. announces the appointment of Mr. *Hooker* Stoughton as Manager of Aircraft *Fastener* Section of the *Closure* Div.

Wanted: Manpower

From any angle we look at it, the air conditioning industry seems headed for one of the greatest booms in America's industrial history. It has a good many things going for it:

(1) An expanding economy and unprecedented business prosperity—which enhance its commercial and industrial market possibilities.

(2) A population explosion, plus continuing high consumer incomes—which will open up the long-sought residential market to real big exploitation possibilities. Buyers of new homes more and more want all-year comfort and health as represented by air conditioning. Within a relatively few years home cooling *should* become as common as bathrooms.

(3) Increased leisure and desires for luxuries — which underpin the probably spectacular growth of the automotive, specialty, and commercial air conditioning markets.

Judging by present trends, and by market forecasts we've seen which were made for responsible corporations:

1. Residential air condition-

(Continued on Page 12, Col. 1)

Airtemp Features 3 Cabinet Designs In '57 Room Units

DAYTON — Announcing details on its "Dandy Dozen—plus One" 1957 line of room air conditioners, Airtemp Div., Chrysler Corp. said the company has readied units in three cabinet designs—one design for conventional, double-hung windows; one for casement windows; and the Imperial "wall-thin."

Wall-thin design permits either in-the-wall or in-the-window unit location.

Seven "conventional window" conditioners, three "casement," and three Imperial wall-thins comprise the line.

"In developing our new room unit series, we've done some consolidating," said room unit sales manager, M. T .Bard.

"Reason for the move is that

(Concluded on Page 6, Col. 1)

Fedders Offers Outlets Cooling Unit Rental Plan

MASPETH, L. I., N. Y.—Distributors and dealers handling Fedders-Quigan Corp. air conditioners will participate in a national rental plan on such equipment, it was announced.

The rental plan is aimed at providing advantages for such establishments as hotels, motels, apartment dwellings, and business establishments, who buy many packaged air conditioners.

This non-recourse rental plan is being sponsored by Fedders through National Equipment Rental, Ltd., a New York corporation. The distributor or dealer will make the deal with the purchaser at the local level, and will then in effect execute a sale to National Equipment Rental, Ltd., and be responsible for the installation of the units.

$1,000 will be the minimum

(Concluded on Page 35, Col. 2)

ASRE To Set, OK Standards, Code

BOSTON—In its 43rd semi-annual meeting here, the American Society of Refrigerating Engineers approved five amendments to its charter, welcomed five new sections into the society, launched a new type of conference on field problems, and heard a technical program.

The principal amendment change was one which will broaden the purposes and functions of the society, so that it will now "encourage and conduct scientific research and the study of principles and methods" and can "establish, approve, adopt, and promulgate standards, codes, or recommended practices."

New ASRE sections which re-

(Concluded on Page 35, Col. 1)

ARW Product Knowledge Clinic To Open Dec. 14

CHICAGO—The two-day air conditioning and refrigeration "Product Knowledge Clinic" to be held at the Morrison hotel here will get under way Friday morning, Dec. 14, with a panel discussion on water saving devices.

Presented by the Air Conditioning & Refrigeration Wholesalers, Region Six, the clinic will take the form of an educational and panel discussion type meeting in which an audience of air conditioning and refrigeration contractors are being invited to participate.

Some 80 manufacturers will man individual conference booths to discuss particular problems on their products with the contractors.

Other topics to be covered

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Contractor Charges Architects and Engineers Offer 'Incomplete' Service

DETROIT—A veteran refrigeration and air conditioning contractor, given the chance at the first American Society of Refrigerating Engineers "Field Installation Practices and Problems" conference, took the opportunity to "sound off" on some of the practices of architects, engineers, and manufacturers.

The field installation conference proved immensely popular with those attending the ASRE meeting, and a show-of-hands vote was unanimous in urging continuance of this particular conference subject at future meetings.

"The contractor does the work that the architect and consulting engineer supposedly do in completing specifications, plans, and drawings for an installation, and the contractor assumes all the responsibility for the correct installation, servicing, and satisfactory performance of the job"—that was the gist of what Austin Ford of Jarvis Engineering Co., Boston, told the assembled engineers and manufacturers attending the conference.

Explaining that his remarks

(Concluded on Back Page, Col. 1)

Squeezed for Space, Lewyt May Drop Conditioner Mfg.

LONG ISLAND CITY, N. Y. —Squeezed for space by termination of the lease on its Brooklyn plant this month, Lewyt Air Conditioning Corp. would like to get out of the air conditioner manufacturing business.

Alex Lewyt, president, said he would be willing to loan a local supplier his tools, dies, quality control, and engineering to produce the units for him.

"Or," he added, "if anyone came up with the right offer for the business, we would sell outright."

Lewyt intends, however, to

(Concluded on Page 4, Col. 5)

Central Unit Leads 90-Model 1957 Whirlpool-Seeger Line

* * *

RCA Whirlpool Has 12-Mo. Franchise For Distributors

MIAMI BEACH, Fla.—A 12 months franchise for all distributors of RCA Whirlpool appliances, "believed the first of its kind in the major appliance industry," was announced here last week by John L. Bricker, vice president of Whirlpool-Seeger Corp.

The new distributor agreement is effective immediately. It is renewable annually "unless either party elects not to renew, in which event written notice will be given 90 days prior to the date of the expiration of the franchise." The new Whirlpool-

(Concluded on Page 39, Col. 3)

MIAMI BEACH, Fla.—Whirlpool-Seeger Corp. last week unveiled its first full line of major appliances and a central air conditioning system which, the company claims, "can be completely installed in less than a day."

Among products in the line are a refrigerator-freezer combination "in which cold, purer air is automatically distributed uniformly every 45 seconds to refrigerated foods," and 16 models of room air conditioners featuring "compact and streamlined construction."

The full line comprises nearly 90 different models covering—in addition to air conditioners and refrigerators—freezers, ice cube makers, dehumidifiers, dishwashers, dryers, food disposers, ironers, kitchen cabinets, ranges, sinks, washers, and washer-dryer combinations.

The 14 major appliances, complete lines of which are scheduled to be on retail dealers' floors by Jan. 15, will carry the brand name "RCA Whirlpool," with the exception of a six-

(Concluded on Page 39, Col. 1)

RACCA Urges Joint Mechanics' Training

MIAMI BEACH, Fla.—Labor, management, and money were three major problems discussed by the Refrigeration & Air Conditioning Contractors Association at its annual convention here recently.

At a labor forum during the convention, participated in by both contractors and officials of the United Association, more action was urged to bring into being an apprenticeship training program for refrigeration and air conditioning mechanics.

It was emphasized that such programs would have to be worked out at the local level by joint contractor-union committees. However, Joe Monahan, general organizer for the UA,

(Concluded on Page 39, Col. 4)

Westinghouse Names 2, Sets Up Wholesale Dept.

STAUNTON, Va. — Appointment of Donald R. Meckstroth as manager of marketing for the package products department of the Westinghouse air conditioning division has been announced by Bruce D. Henderson, vice president and division manager.

Meckstroth succeeds John A. Gilbreath who has been named manager of the newly-organized air conditioning wholesaling department.

Both men will report directly to Henderson.

(Concluded on Page 4, Col. 5)

Many Problems Involved

Joint Union-Contractor Efforts Seen Necessary To Open Air Conditioning Mechanics' Apprenticeship Program

MIAMI BEACH, Fla. — Apprenticeship training programs for air conditioning mechanics is only going to come about through joint union-contractor efforts on the local level, it was emphasized at a labor forum conducted during the annual convention of the Refrigeration & Air Conditioning Contractors Association here recently.

No Program Yet for Conditioner Installers

Joe Monahan, general organizer for the United Association, declared flatly, "There is no apprenticeship training program on smaller tonnage (15 tons and under) work. There is a need to sit down and work one out." He expressed the union's willingness to do this any time.

Dudley Cawthon, retiring president of RACCA, told the RACCA contractors that "we will never have a proper training program until we get together and make it available."

Union-Contractors Meeting Planned

Cawthon said that a meeting between union officials and contractors was planned but no definite date had yet been set.

It was emphasized that joint union-contractor committees would have to work out many problems, such as where to get and train teachers for the instruction, where to find apprentices, how to finance the program, and what the program was to include.

Partial answers have been found in the few training programs that are already under way. One is now rolling smoothly in Miami, one in Los Angeles, and others are just getting under way in Chicago and Houston.

The Miami group, for instance, is conducting a five-year program under the Florida Industrial Commission's department of appreticeship financed by a 1-cent an hour per man contribution by the contractors.

Karl Behnke, apprenticeship representative for the commission asserted that a set of standards of instruction have been set up for the Miami program and a course of instruction outlined.

TRAINING AIDS USED in the United Association's apprentice training program for refrigeration and air conditioning mechanics are exhibited by Joe Corcoran (l.) director of the UA's training department, and Karl Behnke of the Florida Industrial Commission to Armand Cowan, president of the Air Conditioning & Refrigeration Contractors Association of Miami, and George Meyers, of Miami Local 725, UA.

The course, he said covers everything from window units through the heavier types. It includes instruction in basic refrigeration, air conditioning, small or large; welding, and pipe fitting.

The Miami program also includes "refresher" courses for journeymen in basic and advanced refrigeration, basic heating, and basic controls.

UA 'Has Anything' Needed To Conduct Training

Joe Corcoran, director of the training department for apprentices and journeymen in the UA, explained that his office has about anything any instructor would need to conduct an apprenticeship training program. He said more than 200 instructors have completed training at a preparatory course at Purdue university.

William Moody of Houston, newly-elected president of RACCA, asserted during the discussion that five years was too long to wait for trained mechanics. He believed that a two-year program would have to be worked out or the contractors would lose jurisdiction over the work.

'Takes 5 Years to Train A Good Journeyman'

Monahan reiterated his belief that it takes five years to train a good journeyman, but said that "to meet the needs of the situation we should be able to work out a temporary program" for faster training.

Contractor C. L. Walling of Los Angeles, declared, "I'm not worried about jurisdiction. The contractor with the best trained mechanics will get the work. The public will give it to him. There is nothing that the contractor or union can do.

"This is not a union problem," he added, "it is an employer problem to be solved with union assistance."

Harry Levine of Detroit complained that while the appentice program might be all right for training installers, it was not producing servicemen.

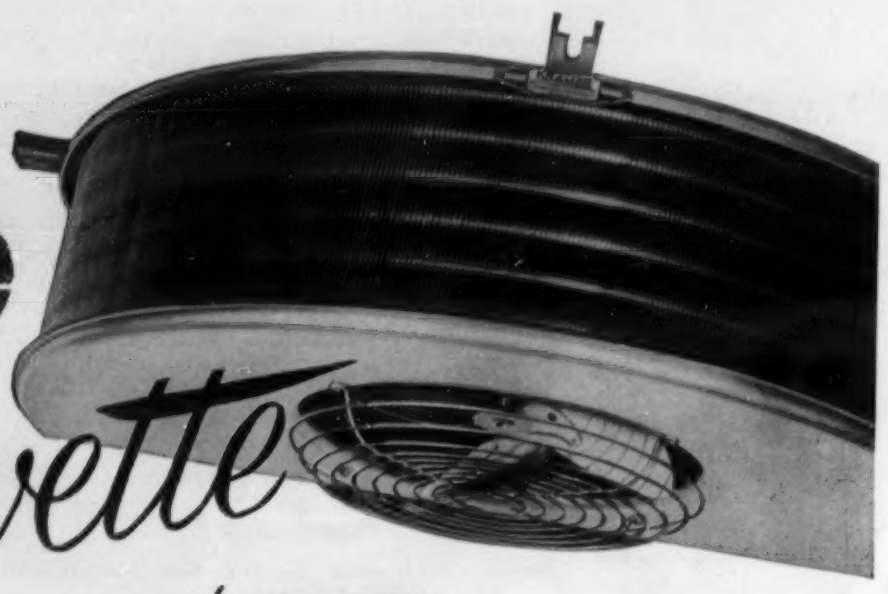
Harvey Miller of Chicago, moderator of the forum, admitted that no training program for servicemen had yet been set up. But, he added, when "we do get around to it, I'm sure that Joe Corcoran and his staff will create a good program. They have done it for the heating and plumbing industries and they will do it for us."

Individual Contractor 'Still Responsible'

Harvey Hottel of Silver Springs, Md. pointed out that the responsibility for training servicemen still rests with the individual contractor. Until such a training program is set up, he said, we must do a lot of this training ourselves.

George Meyers, business agent for the Miami Local 725 of UA, contended that there is no short cut to good training. All an apprenticeship training program can do, he noted, is to give basic training.

Large Curvette by KRAMER



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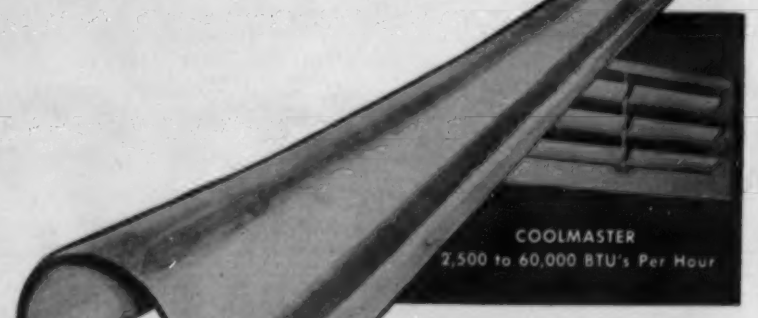

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RADIAL
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KAY-TEE
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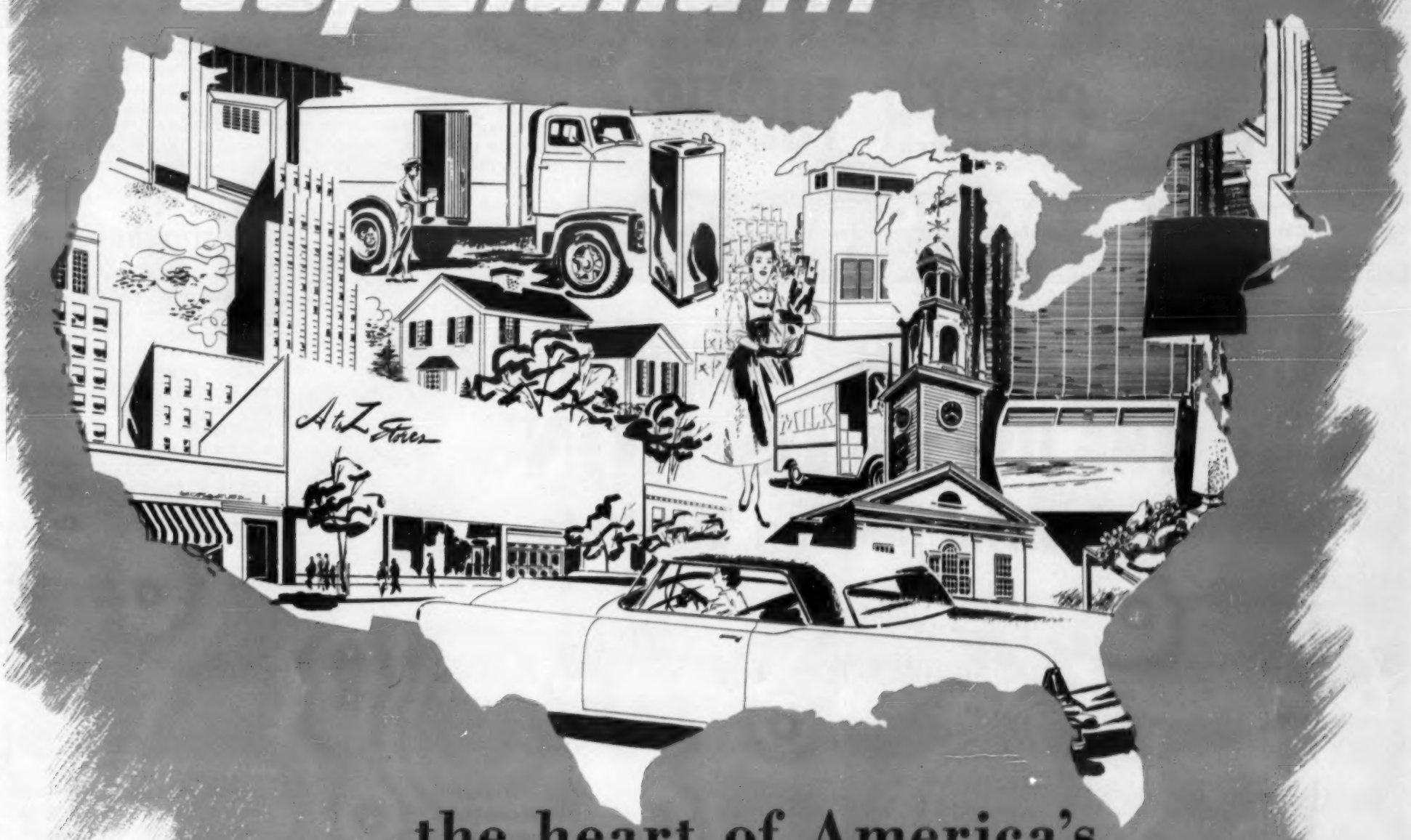
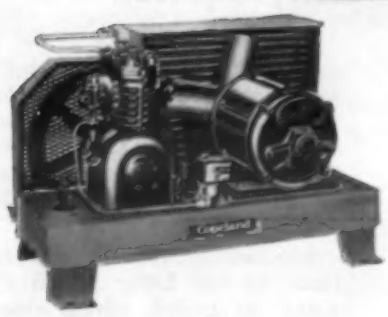


the heart of America's finest air conditioning and commercial refrigeration

Keeping folks cool, comfortable and well fed is a distinguished tradition at Copeland. Copeland's engineering contributions to refrigeration and air conditioning progress have helped bring fresher, more flavorful foods to America's tables, healthfully-cooled buildings in which to live and work. Your products perform better, serve better, sell better . . . powered by Copeland.

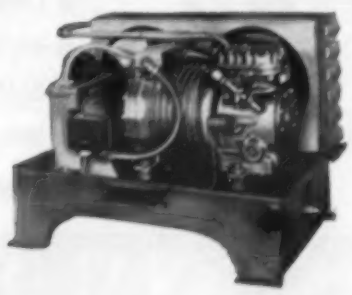
SINCE 1918 **Copeland** REFRIGERATION CORPORATION, Sidney, Ohio

Write for specifications and performance data on Copeland compressors and condensers for display cases, coolers, air conditioners and truck refrigeration.

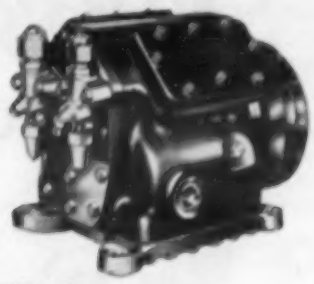


BELT-DRIVEN CONDENSING UNITS . . .
Superior—engineered for every refrigeration need.

COPELAWELD
Heavy-duty performance at low current consumption.



COPELAMETIC
the accessible hermetic . . . The industry leader for rugged dependability.



AUTOMOTIVE AND TRUCK COMPRESSORS . . .
Designed for the critical needs of truck and auto air conditioning and refrigeration.

For more information about products advertised on this page use Information Center, page 24.

What's in a name? QUALITY
...if the Name is
READING
COPPER TUBING
FOR REFRIGERATION & AIR CONDITIONING EQUIPMENT
READING COPPER TUBE
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Wholesaler's 'Freon' Prices Upped 2%, Discount Offered

WILMINGTON, Del.—In an effort to improve credit practices, du Pont has announced a new discount and price schedule for wholesalers of its "Freon" refrigerants, effective Saturday, Dec. 1.

Prices of the major "Freon" refrigerants at the wholesale level have been increased about 2%, with a corresponding 2% discount when the customer pays the invoice within 10 days. The changes apply to all wholesaler orders for "Freon-11," "Freon-12," "Freon-22," "Freon-113," and "Freon-114," the firm explained.

Prior to Dec. 1, du Pont's Kinetic Chemicals Div. had no discount for payment of invoices for refrigerants.

U. S. Starts $18 Million Conditioning Program

WASHINGTON, D. C. — The U. S. government has finally decided to go ahead with air conditioning Federal buildings.

Formal launching of an $18 million program to air condition existing Federal buildings was announced here by the General Services Administration, government housekeeping agency.

Contracts were awarded—to begin the program—to architectural firms to draft designs for air conditioning the U.S. Post Office and Court House in Galveston, Texas, and the Post Office and Court House at Texarkana, Texas.

Westinghouse--

(Concluded from Page 1, Col. 5)

Meckstroth will have complete authority and responsibility for all phases of package products marketing and all package product sales personnel will be under his direction. Reporting to Meckstroth will be the manager of advertising, sales manager, manager of heat pump sales, general service manage, and manager of sales service.

In his new position, Gilbreath will manage the new wholesaling department entirely independently of the air conditioning division. The relationship of the wholesaling department to the air conditioning division will be that of a customer. Initial operations will be conducted in Cleveland and Los Angeles.

Henderson said the wholesaling department is designed to fill the gap caused by the rapid growth of the air conditioning industry. This rapid growth, he said, has produced a shortage of risk capital and management personnel capable and willing to keep pace with the industry's growth.

The Westinghouse executive explained that the company has no intention of substituting such an arrangement for any area where independent distribution can obtain a satisfactory share of the market.

Henderson said the new department is expected to provide a means of business research into the most effective methods of wholesale merchandising and management.

These organizational changes, said Henderson, are further steps to capitalize on the modern and complete packaged products manufacturing facility at Staunton, which is now in full production on the new 1957 product line.

Lewyt Squeeze--

(Concluded from Page 1, Col. 4)

continue marketing through-the-wall air conditioners to builders and contractors. He is still actively seeking this business and says he has enough stock on hand to fill present orders and some future orders.

Limited production will continue in the Long Island City plant, he added, which also is producing two vacuum cleaner models, warehousing completed units and parts, and increasing its defense activity.

LARKIN PIONEERED
THE USE OF US-KON®
industrial heating blankets

LARKIN was first to recognize the need for an improved heating element in the drain pans of low-temperature units with automatic defrosting. Preventing drain pans from icing, and yet holding temperature rise to a minimum, was a problem that had to be solved.

Larkin engineers took their problem to the United States Rubber Company, developers of conductive rubber-imbedded heating elements for aircraft and many other heating applications.

U. S. Rubber engineers came up with the answer—the US-KON industrial heating blanket, especially designed for refrigeration applications.

This was the finishing touch to the most efficient, economical and trouble-free unit on the market. Get the facts from your wholesaler about the LARKIN Humi-Temp with Frost-o-Trol automatic hot gas defrosting.

LARKIN LOW TEMPERATURE HUMI-TEMP
WITH
FROST-O-TROL®
AUTOMATIC HOT GAS DEFROSTER

- US-KON heated drain pan for positive drainage of melting ice and water
- Minimum temperature rise during defrosting
- No excess heat or moisture load
- Lower operating costs
- Higher efficiency of evaporator unit
- Heat applied throughout entire evaporator
- Melts frost from inside out
- Simple, low-cost installation

LARKIN COILS INC.
519 MEMORIAL DRIVE, S.E., ATLANTA, GA.,—MUrray 8-3171

For more information about products advertised on this page use Information Center, page 24.

Left to right: Don Wood, General Sales Manager—John Morrill, General Manager—Clyde Ploeger, Director of Engineering.

WE WANT YOUR COMPRESSOR BUSINESS!

Our name is Evansville Division of Bendix-Westinghouse Automotive Air Brake Company. We're a new name in the manufacture of refrigeration and air-conditioning compressors, but in manufacturing other types of compressors we've been a leader for many years.

We want your business and feel we're well qualified to handle it. Our product consists of a complete line of hermetic compressors and condensing units ranging in capacity from ¼ to 7½ H. P. They're designed for low- and high-temperature applications and offer several new exclusive features which have already resulted in substantial orders from some of the most respected names in the industry.

Our manufacturing facilities located here in Evansville, Indiana, are big, modern, well-staffed and well-tooled. We can handle any size order you can give us.

Our personnel know this business from over 33 years' manufacturing history in this field and are dedicated to carry out our main policy . . . to provide you with the finest products and best service available.

We hope to get acquainted with you soon.

NOT IN APPLIANCE BUSINESS

Neither this division nor the parent company—Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio—has any connection with appliance manufacturing. Bendix-Westinghouse is a joint subsidiary of Bendix Aviation Corporation, Detroit, Michigan, and Westinghouse Air Brake Company, Wilmerding, Pennsylvania. EVANSVILLE DIVISION, EVANSVILLE 11, INDIANA.

EVANSVILLE DIVISION of

Bendix-Westinghouse

Automotive Air Brake Company

For more information about products advertised on this page use Information Center, page 24.

Airtemp '57 Room Unit Line--

(Concluded from Page 1)

our engineering staff during the past three years has created a product line—consisting of conventional, casement, and Imperial wall-thins—that's adaptable to practically every type of conceivable application.

To Concentrate on 13 'Popular' Models

"Within this thoroughly complete, extensive application sphere, we're going to concentrate on the 13 conditioner models—13 models that sales figures, survey figures, distributors, and dealers tell us are the most popular with the public.

"In establishing the "Dandy Dozen—plus One" we analyzed—from both seller and buyer viewpoints—market trends pertaining to unit design and capacity. As a result of findings, we discontinued certain models of last season and added new models, especially in the larger hoursepower bracket.

"The adoption of a 13-model line will considerably simplify the important matter of distributor and dealer unit inventory. At the same time, as no application versatility has been sacrificed, the move will up, we feel, the sale appeal of our '57 series."

The series includes the following models in the "conventional window" category:

MODEL		HP.
1675-12	Custom	¾
1600-9	Custom Royal	1
1600-10	Custom	1
1600-11	Custom Royal	1
1600-13	Custom Royal	1
1615-1	Custom Royal	1½
1620-1	Custom Royal	2

Custom Royal models include a ventilating control, exhaust control, and two-speed fan.

ILLUSTRATED models of Airtemp's 1957 room air conditioner line include "thin design" at lower left, conceived for either in-the-wall or in-the-window placement and available in ½, ¾, 1-hp. sizes; at top left in ¾ and 2-hp. sizes is the room unit for double hung windows; and model at right is a casement window unit which comes in one ½ and two ¾-hp. sizes.

Model 1600-13 Custom Royal (1 hp.) offers features of reverse cycle heating and 12-amp., 115-volt operation. Model 1675-12 Custom (¾ hp.) offers 7½-amp. operation. Model 1600-11 Custom Royal (1 hp.) offers 12-amp., 115-volt operation.

Featuring new grille design and styled for flush window mounting, all conventional window models include automatic thermostat as standard equipment.

"Casement" models are:

MODEL		HP.
1750-2	Casement Special	½
1775-3	Custom Royal	¾
17775-4	Custom	¾

Automatic thermostat is standard on both Custom and Custom Royal models. The Custom Royal (1775-3) also includes ventilating control and exhaust control. The Custom version is designed for 7½-amp. 115-volt operation.

All models carry a 5-year warranty.

No Pane Removal Needed For Casement Installation

"Airtemp casements can be installed like a screen in minutes," the company said. "They require neither pane removal nor window alteration."

Imperial wall-thins include:

MODEL		HP.
1850	Imperial "Wall-thin"	½
1875	Imperial "Wall-thin"	¾
1880	Imperial "Wall-thin"	1

Thermostat, ventilating control, two-speed fan are standard features on all three models. Used either in the wall or in the window, the thin Imperial complies with all "overhang" codes and all three sizes fit the same compact cabinet.

Airtemp pointed out that it does not publish suggested retail or factory retail at factory room air conditioner prices, "feeling that this is a matter to be determined and established at the distributor-dealer level."

Bard said the 1957 series "will receive the support of an enlarged national advertising program and a complete new array of merchandising pieces.

"As was done last year with a terrific amount of success, we'll be sponsoring a special pre-season incentive-type sales campaign.

To Announce Sales Contest Particulars In January

"Contest particulars and other details pertaining to Airtemp's '57 room air conditioner program will be announced when we hold our distributor-dealer meetings during late January and early February." Bard stated the introductory meetings, according to present plans, will be held in 85 major cities.

"From where Airtemp sits, '57 room unit sales prospects appear exceptionally good. While conferring with the officials of several of our major outlets, we've met with heartening expressions of optimism."

Bard also stated: "As we begin production of '57 models we believe that unit prices will be comparable to those of last year. However, should there be a future price adjustment, there's little likelihood that it will be downward. Most cost factors are pushing in the opposite or upward direction."

Bard concluded: "Because we consider the action of immediate and long-range importance, I also want to mention that Airtemp is one of the industry signers of the voluntary agreement to publish room unit capacity ratings in accordance with ARI Standard 110-56. Those ratings appear on all Airtemp 1957 room air conditioner specification forms."

NO MORE NOISE

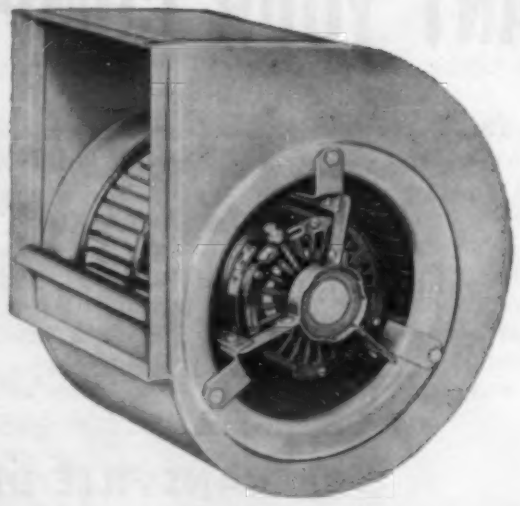
You can stir up quite a breeze with Utility's Direct Drive blowers without making a sound. The answer is in the Neoprene hubs which isolate motor noise and vibration. These hubs, a product of Utility's consistent engineering research, now an integral part of all direct drive blowers, are brought to you at no extra charge.

Utility Direct Drive Blowers are adaptable to the manufacture of heating, cooling, refrigerating and ventilating equipment. These blowers require less space, have no unnecessary accessories and can be speed controlled easily.

Noise it around among your customers—these new silent direct drive blowers are further evidence of Utility's top quality engineering and advanced production techniques. In addition to such exclusive features, Utility offers the combination of the best products in the field for the lowest cost.

Check Utility for blowers, blower parts or any combination of parts—and discover for yourself...

YOU CAN'T MATCH UTILITY FOR PRODUCT AND PRICE



A Division of Utility Appliance Corp.

UTILITY FAN CORPORATION

911 East 59 Street, Los Angeles 1, California

Producers of blowers and blower parts for original equipment manufacturers. Manufacturers of heavy and standard duty blowers for heating, air conditioning and ventilating installations. Write for catalogue data.

It Didn't Just Happen

How Dealer Sold 23 Freezers as Direct Result of It's Sportman's Show Exhibit

FT. WILLIAM, Ont., Can.—Setting their sights on a "big bag" of sales during the recent Lakehead Sportsman's Show, salesmen of Mahon Electric Co., of Ft. William and Port Arthur, in Ontario, registered eight Amana freezer sales at the booth and 15 immediate follow-up sales.

Mahon sells the Amana Plan for Better Living in the two Canadian cities.

The excellent sales showing was no accident. For two weeks prior to the event, Mahon blanketed both areas with tie-ins between Amana freezers and the Sportsman's Show. Amana freezers were prominently placed in the windows of 15 business places with large placards announcing that the same model 15-cu. ft. freezer, would be drawn as top prize at the show.

MODEL poses with Amana Model 19 freezer which was on display at Sportsman's Show. Miss Canada later drew name of grand prize winner, who was awarded an Amana Model 15 freezer.

Place mats, advertising the Sportsman's Show and the prize Amana 15, were placed in hotel and restaurant dining rooms.

At the show itself an Amana freezer model 19 was spotlighted on the stage in full view of the more than 44,000 people who attended the show. At the booth of the Ft. William Kiwanis Club, the Show's sponsor, an Amana model 80 was filled with wall-eyed pike which were given away. For every prize pike that "got away" to a lucky customer, Amana received a plug.

In addition to a 15-cu. ft. freezer and an 18-cu. ft. freezer-plus-refrigerator that were displayed, Mahon's booth featured an operating model 19-cu. ft. upright freezer that was used to freeze the trout that customers caught in a nearby fish pond. More than 4,000 newspaper inserts, advertising Amana freezers and Mahon's Amana Plan for Better Living were distributed from the booth.

With 8,000 people looking on, Miss Canada of 1956 drew the name of the lucky winner of the Amana 15 freezer. It then was awarded by Amana's regional sales manager.

At the conclusion of the Sportsman's Show, the dealer who was just beginning to find time to explore the flood of live leads that resulted, called the show a terrific promotion.

Operation Railroad

Customers Save $40 by Buying Freezers Off the Car

IDAHO FALLS, Idaho—Selling freezers direct from a railroad car recently paid off for a local store's appliance department.

For a one-day-only sale, the department store in a newspaper advertisement explained that it would cost the firm $40 per unit to handle and warehouse each of the freezers.

"Buy the freezer direct from the car—and save the $40" was the invitation the firm advertised.

It produced good results, it was reported.

During the event, freezers were sold for $359.95, $40 under regular price. A store spokesman said the novelty of the sale combined with the saving, appealed to household freezer prospects.

BOHN offers the only COMPLETE LINE of ALUMINUM "LOW-SIDE" PRODUCTS

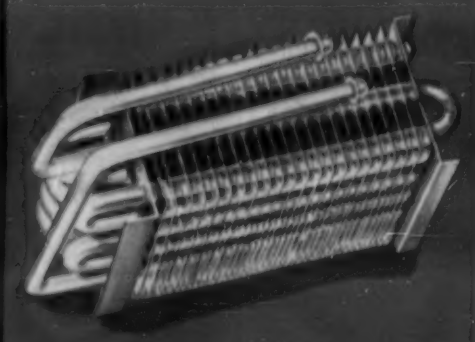
BONDED-SHEET EVAPORATORS

TUBE-ON-SHEET EVAPORATORS

Production quantities of both types are being produced by Bohn for the country's leading refrigerator manufacturers. Whatever your evaporator problems, it will pay you to take advantage of Bohn's experience and complete engineering service.

SPECIAL TUBULAR HEAT TRANSFER PRODUCTS

Bohn engineering assistance and wide experience are available for application problems.



ALUMINUM FIN AND COPPER TUBE EVAPORATORS

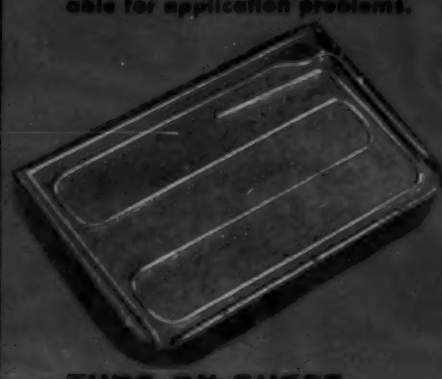
Presently being supplied to the industry, combine high efficiency with lower cost.

MISCELLANEOUS PARTS

Simple or complex Bohn high quality aluminum accumulators are uniformly produced at lowest possible cost. Every Bohn connector double-checked for perfection.

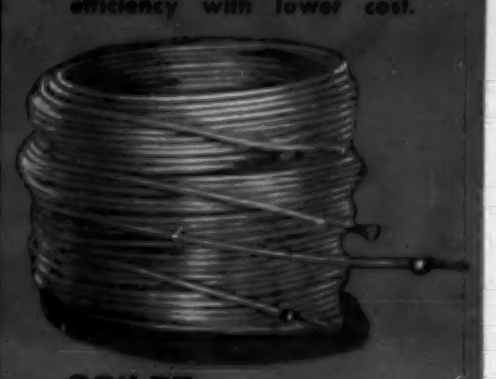
MULTIPLE FREEZER SHELVES*

Shipped as shown. No joining or further processing required. Simply open out and install. Bohn triangular aluminum tubing gives shelves greater rigidity and primary freezing surface.



TUBE-ON-SHEET FREEZER SHELVES

Bohn freezer plates made with seamless aluminum tubing freeze food faster at less cost, provide uniformly low temperature throughout freezer.



COILED TUBING

Bohn aluminum tubing is available complete with copper brazing spuds. You can save as much as 3c to 12c per foot by switching from copper to aluminum.

*Patent Applied For

FREEZER PLATES
UNIT COOLERS
EVAPORATORS
CONNECTORS
TUBING
COILS

BOHN

For the *only* complete line of refrigeration products and for complete engineering service . . . look to Bohn . . . the one manufacturer who has more experience than any other in the aluminum "low side" product field.

ALUMINUM AND BRASS CORPORATION
DETROIT 26, MICHIGAN

SALES OFFICES: *Boston • Chicago • Cleveland • Dayton • Detroit • Indianapolis Milwaukee • Minneapolis • Moline • New York • Philadelphia • Rochester • St. Louis*

For more information about products advertised on this page use Information Center, page 24.

Product Knowledge Clinic--

(Concluded from Page 1, Col. 3)

Friday morning, in addition to water saving devices, are "Safety In the Manufacture and Installation of Refrigeration Equipment" and "Flow Controls."

Discussions Friday afternoon will be devoted to "Air Conditioning Tools and Their Applications" and "The Air Conditioning Wholesaler—Your Partner." Also scheduled for Friday are a cocktail party, banquet, and entertainment. Saturday morning, the panel discussion will be on "Refrigerant Applications."

The clinic committee includes John P. Glass, Jr., James Alter, E. Peter Sorensen, and Herman Goldberg.

Following is the complete program of the Product Knowledge Clinic:

FRIDAY, DEC. 14

9:55 a.m.—"Welcome"—John P. Glass, Jr.

10 a.m.—"Water Saving Devices"—A. Cooling Towers and Evaporative Condensers. B. Air-Cooled Condensers.

Moderator: Larry Jennings, Dunham-Bush, Inc. Panelists: Robert Nelson, Halstead & Mitchell; Otto J. Nussbaum, Kramer Trenton Co.

10:30 a.m.—"Safety In the Manufacture and Installation of Refrigeration Equipment" — James McKeague.

10:45 a.m.—Answers to your questions by McKeague and inspectors.

Note: This feature is through the courtesy of Gerald Gearon, supervising mechanical engineer and chief deputy inspector, City of Chicago.

11 a.m.—"Flow Controls."

Moderator: Delta Albright, Controls Co. of America. Panelists: Don Rentschler, Sporlan Valve Co.; J. A. Schenk, Alco Valve Co.; Willis Stafford, Detroit Controls Corp.

11:30 a.m.—Consultation with manufacturers' representatives at their booths.

2:30 p.m.—"Air Conditioning Tools and Their Application."

Moderator: James Emmett, Jr., J. P. Marsh Corp. Panelists: Charles Benson, Imperial Brass Mfg. Co.; Ed. S. Turner, Jr., Linde Air Products Co.

3 p.m.—"The Air Conditioning Wholesaler—Your Partner."

Moderator: A. Starr Hull, executive secretary, Air Conditioning & Refrigeration Wholesalers. Panelists: Harry Alter, Harry Alter Co.; G. R. Kinnally, James B. Clow Co.; Carl Shinneman, Polar Supply Co.

3:30 p.m.—Consultation with manufacturers' representatives at their booths.

5 p.m.—Cocktail Party.

6 p.m.—Banquet. Presiding: J. B. McGuan, chairman, ARW, Region Six.

Introduction of distinguished guests: E. Peter Sorensen, director, ARW, Region Six.

Introduction of guest speaker: John P. Glass, Jr., past president, ARW.

Address: George F. Taubeneck, editor and publisher, AIR CONDITIONING & REFRIGERATION NEWS.

Entertainment: "The ARW Region Six Review," produced and presented by Herman Goldberg, Herman Goldberg Co.

SATURDAY, DEC. 15

10 a.m.—"Refrigerant Applications."

Moderator: R. H. Israel, Virginia Smelting Co. Panelists: Dr. Ralph C. Downing, Kinetic Chemicals Div., E. I. du Pont de Nemours & Co., Inc.; George A. Schnier, American Potash & Chemical Corp.; Dr. W. O. Walker, University of Miami and consultant for General Chemical Div., Allied Chemical & Dye Corp.

11 a.m.—Consultation with manufacturers' representatives at their booths.

3:00 p.m.—Adjourn.

53 MONDAYS IN 1956

The 52nd and 53rd issues of the NEWS will be combined into one, the issue of December 24. No issue December 31. Be sure to watch for this special combination which will include the Annual Index of key editorial material for the entire year.

Las Vegas RACCA To Fight Bid Peddling

LAS VEGAS, Nev.—A campaign to combat bid peddling, initiated in July in a resolution addressed to Clark County architects, has been launched by the Refrigeration & Air Conditioning Contractors Association of Clark County.

The group requested that general contractors be required to submit a list of bona fide subcontractors and to pass along to owners any savings effected by negotiations after the original bid was entered and accepted.

The RACCA unit planned to ask contractor associations to encourage their membership to be a party to this resolution. Reception by architects and the majority of builders has been encouraging to date, it was reported.

The RACCA group also said that information concerning bad credit risks will be reported by member contractors and each member will receive a monthly tabulation of the reports.

B.A.C. Names Newlin

BALTIMORE — Appointment of R. E. Newlin & Associates as exclusive sales representative in Mississippi and southern Louisiana was recently announced here by Baltimore Aircoil Co., Inc.

Headed by Robert E. Newlin, ASHAE and New Orleans Engineers Club member, the firm will act as agents for BAC's line of evaporative condensers and cooling towers, it was explained.

AIR CONDITIONING SALES ENGINEER

Large Chicago Contractor, York Distributor, will fill two openings in their sales department. Openings due to promotions. Men 25-40 who have proven sales ability in Commercial and Industrial Refrigeration and Air Conditioning. Engineering education desirable. Profit Sharing, Florida Vacations and other benefits.

See Mr. Baker at Murphy & Miller, Inc.
1326 South Michigan Avenue, Chicago
Telephone HArrison 7-8900

OVER 5 MILLION *Curtis* prospects...

Your prospects

saw this full-color sales message

in The Saturday Evening POST

a new, aggressive and *continuing* national advertising campaign to increase sales of Curtis equipment, this full-color sales message in the Post was driven home to more than 5 *million prospective buyers* of Curtis packaged air conditioning units.

If you are not a Curtis Dealer, and if you're qualified, *now* is the time to get started! You'll be selling the world's finest air conditioning equipment, *competitively* priced, and backed by a promotional-minded, on-the-go manufacturer with a solid 102 years of experience and skill.

Write today, and we'll show you how you can increase sales *and* profits with a complete, flexible line of Curtis Air Conditioning equipment.

Refreshing*
to the Eye, too!
yes...
this beautiful Curtis Air Conditioning Unit
deserves to be seen!
No question about it. The new CURTIS packaged air conditioner is refreshing. It is also silent, dependable, efficient and economical to ... and operate. It refreshes by circulating ... of clean, crisp, dry, cool air ... CURTIS packaged ... a wide ...
...and where water is a problem...
here's the answer!

Remember you can count on our 102nd year Curtis

Packaged air cooled air conditioning units

Packaged liquid chiller up to 100 tons

Industrial air compressors

Auto Lifts single & two posts

MANUFACTURING CO.
Refrigeration Division
1912 Kienlen Ave., St. Louis 20, Mo.

CM-15

For more information about products advertised on this page use Information Center, page 24.

BATTERY of nine Mohawk ice cream merchandising cabinets (model 520) in Stevens Supermarket, South Miami, Fla., rolled up a total sale of 10,000 pints of ice cream on a recent weekend promotion.

9 Merchandisers Sell 10,000 Pints of Ice Cream In Weekend Promotion

CHADWICKS, N. Y.—It's no secret that when ice cream is displayed attractively at supermarket checkout points, sales of this perennially popular food invaribaly zoom upwards, Mohawk Cabinet Co., Inc. here points out.

"In órder to prevent its melting between the store and the home refrigerator, shoppers wait until the last moment to buy ice cream," the company noted. "Smart supermarket merchandisers now cash in on this practical routine by flagging shopper attention at the pay-up point."

A case in point, it was indicated, is an experience of the Stevens Supermarket at 6600 Southwest 57th Ave. in South Miami where a battery of nine model 520 Mohawk ice cream merchandising cabinets are installed. In that store, a special weekend promotion rolled up a total sale of 10,000 pints of ice cream, it was reported.

Stevens also has another modern store at 6209 Northwest 27th Ave., Miami, where seven Mohawk model 520's are similarly installed.

According to T. E. Hoye, president of Mohawk Cabinet, Mohawk was recently making delivery on a record order of nearly 700 cabinets to another leading supermarket chain in the southeastern and Gulf states.

The Mohawk line now includes three newly-designed ice cream merchandising cabinet models: Model 920, 720, and 520, with respective capacities of approximately 990, 700, and 500 pint packages.

Antibiotic In Chill Tanks May Add Much To Poultry Freshness

BROOKLYN — A new antibiotic called "Biostat-PA," said to extend the freshness time of poultry 50 to 100%, has been developed here by Chas. Pfizer & Co., Inc.

Biostat-PA contains 20% oxytetracycline, a broad spectrum antibiotic which can be added to chill tanks during processing of ice-chilled whole poultry, the company said.

Labeling of processed poultry will be left to the discretion of processors, the company stated. However, inclusion of the statement "oxytetracycline added to retard spoilage" is required by government regulations, it was added.

Howard Names Toussaint To Train Coast Salesmen

PHILADELPHIA — Howard Refrigerator Co., Inc. has announced the appointment of E. M. Toussaint of California to represent the company in the sale of its products to dealers and distributors in the west coast states.

He will train new sales groups as well as the present sales group on the sale of the complete line of Howard commercial refrigerators and freezers.

The territory will be covered through a staff of supervisors presently located in the 11-state area, it was noted. Toussaint, who will head the organization, was formerly connected with Minneapolis-Honeywell Regulator Co. in the management division of manufacturing, the manufacturer further commented.

Fast Cooling Makes Peaches 'Hot Sellers,' Adds to Life Says Farm Journal

PHILADELPHIA — Commercial orchardists are finding that bathing peaches in an ice-bath machine not only takes the field heat out of the fruit quickly but makes them hot sellers, reports the *Farm Journal* magazine.

Stationary coolers, usually of the coil-and-compressor type with refrigerated coils for cooling the water, take a 100-hp. motor to keep compressed refrigerator gas flowing through 2,500 ft. of coils.

Fast cooling gives a peach eight to 10 days extra consumer life, says *Farm Journal*.

Versatile New **Ranco 016 Controls**
Simplify Commercial Installations

New Pressure and Temperature Controls Feature Higher Electrical Ratings, Range and Differential Adjustability

Your control installations on heavy-duty refrigeration and air conditioning equipment are strictly routine with Ranco's new series 016 Controls.

The eleven versatile Ranco models in the new 016 line —including low pressure, high pressure and temperature types—are built to accommodate the higher electrical ratings of some commercial equipment. All models feature single pole, double throw switches designed to open or close on rise of temperature or pressure. And all can be provided with manual reset feature.

Pressure control ranges vary between 5 and 360 psi with adjustable differentials from 10 to 100 psi. Temperature models feature −30° to 105° ranges, adjustable differentials from 2½° to 27°, or fixed differentials of 2° to 4°.

Electrical ratings are approved and listed by UL and CSA: 115 and 230 a.c. Maximum Motor Amp Ratings: Full Load—15.5; Locked Rotor—60.

For full details on the efficient new 016 Ranco Control to simplify your commercial installation, contact your Ranco Wholesaler today.

Ranco® Inc.
COLUMBUS 1, OHIO

Ranco Low Pressure Commercial Refrigeration Control, 016-107

- Contacts open or close on rise of pressure.
- Single pole, double throw switch.
- For SO_2, CH_3Cl, F-12, F-22 and Carrene 7 refrigerants.
- 5 to 95 psi range.
- 10 to 40 psi adjustable differential.
- 10" vac. lowest operating point.
- 115 and 230 V. a.c., 15.5 amps full load, 60 amps locked rotor.

WORLD'S LARGEST MANUFACTURER OF REFRIGERATION CONTROLS

Low Cost Year-Round Comfort In Homes

Studies Show Proper Use of Aluminum-Clad Insulation Overcomes High Equipment Costs, Operating Expenses

NEW YORK CITY—Results of two independent research projects indicating that aluminum surface insulation can achieve year-round comfort in new homes at low cost were revealed recently by the Aluminum Co. of America.

Alcoa interpreted the findings to indicate that the proper use of adequate amounts of aluminum-clad insulation best overcomes two main obstacles to central air conditioning: high equipment costs and operating expenses.

Heating, Cooling Normal House May Be $12 Monthly

By applying the new research findings, Alcoa engineers found that the heating and cooling costs for a home of 1,200 sq. ft. may be as low as $12 a month—provided the house is properly engineered and adequately insulated.

The research projects, sponsored by Alcoa, were conducted at the National Bureau of Standards and at Pennsylvania State university.

At the National Bureau of Standards, research men set out to determine the insulating values of aluminum-clad insulation in combination with other insulating products.

This project was conducted by Henry B. Robinson, assistant chief of the heating and ventilating section, the National Bureau's specialist on insulating problems. Participating as a research associate was Dr. Lee A. Cosgrove of Alcoa Research Laboratories.

The Bureau made 154 separate tests. They included the application of insulation in the five basic directions of heat flow:

Heat Flow Tests

Horizontally — as through a wall inward or outward.

Vertically down—as through flat roof heated by sun.

Down at 45°—as through gabled or sloped roof heated by sun.

Vertically up — as through flat roof when inside was warmer than outside.

Up at 45°—as through gabled or sloped roof when inside was warmer than outside.

Two nationally recognized authorities on thermal properties of materials collaborated on the insulation project at Pennsylvania State University.

They are Prof. E. R. Queer, director of the department of engineering research, and F. A. Joy, professor of engineering.

Tests were conducted in the university's "Climatometer"—a large chamber in which almost any condition of atmospheric temperature and humidity can be created.

A test house was constructed in the enclosure. The structure was 13 by 14 ft. with a ceiling height of 8 ft., attic height of 2 ft. for flat roof, and 5 ft. at peak for gable roof. Heat flow meters were placed throughout the building and a series of 31 summer-type tests were run.

Based on the investigations carried on at both the National Bureau of Standards and at Penn State University, the following conclusions can be made:

It is now possible for the first time to calculate precise insulating values for any aluminum-surface insulating materials in any confined space.

It is possible for the first time to calculate precisely the insulating values of reflective surfaces — either alone or in combination with mass insulation—when facing an open attic area.

In addition, it was concluded:

All attics should be ventilated. Aluminum-clad insulation performs best in ventilated attic.

Aluminum-clad insulation performs its greatest service in summer in ventilated attics, either flat roof or gable roof, when heat is flowing downward.

Service performed by aluminum-clad insulation in walls is virtually the same in winter and summer, since its main function is to serve as a barrier retarding heat flow inward or outward.

Aluminum-clad insulation materials must be properly installed to be effective.

A proper amount of aluminum-clad insulation is essential for the most efficient heat-proofing performance.

Research demonstrated aluminum-clad insulation retards heat and moisture flow through ceilings, walls, windows, floors, and basements, Alcoa said.

Adequate insulation in attic areas will slash air conditioning bills and allow for a smaller cooling and heating unit, it added.

An insulated floor area, with a vapor barrier of aluminum foil, will substantially reduce heat loss and will prevent any penetration of moisture.

As a general rule, the research reports say, vents for gable roofs should not be smaller than 1 sq. ft. of free inlet area and 1 sq. ft. of outlet area for every 300 sq. ft. of attic floor space. Flat roofs should provide inlet and outlet areas twice as large.

Importance of adequate air flow in the attic is evidenced in summer when the attic is much warmer than the outside temperatures. Correct ventilation tends to reduce attic heat to a level approaching outdoor temperatures.

In winter, proper ventilation prevents water condensation. It removes humid air from the attic before moisture can condense on the sheathing of the cold roof. It also protects other parts of the structure, or the insulation material itself.

Should Figure on Proper Moisture Control In House

Adequate moisture control should be taken into account in all new homes being designed for air conditioning, according to the studies made. In addition to being uncomfortable, excessive air moisture means the air conditioning unit has to remove both heat and moisture, thereby increasing fuel bills.

Under normal conditions, total moisture of a house will account for about 30% of the final cooling load. Approximate-

(Concluded on next page)

Another reason more **AIR CONDITIONING DEALERS** *are switching to*

REVOLUTIONARY NEW SLASHES COST AND

• 2 stage, air cooled system • Completely pre-wired • 100% hermetically sealed
• Multiple capacities • Efficient operation regardless of wind pressure

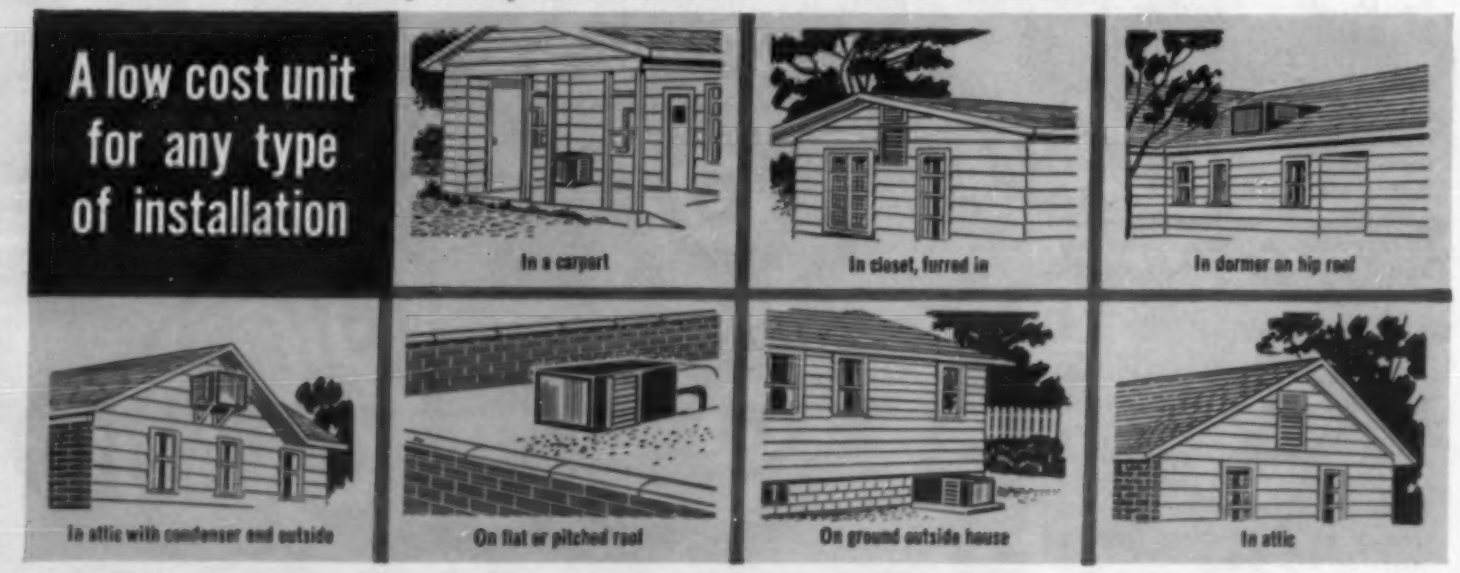
Imagine! An easy-to-install, self-contained unit for whole house cooling . . . one you can sell profitably and in volume at a new low price!

There's no plumbing, no water tower, no remote cabinets, no refrigerant lines to run: it's a compact and *complete* package. And the Stowaway's so versatile you can literally choose your method of installation. Aside from low original cost and fast, inexpensive installation—feature for feature it's today's outstanding "buy" in home air conditioning.

Two-stage cooling assures superior humidity control. One compressor is sufficient for normal cooling operation. But when the outside temperature zooms upward, the second compressor is ready to give the extra cooling capacity needed. Exclusive Lennox "power prop" pumps up to 25% more air, quieter, and at 10% less cost. The pull-through design, overlapping louvres, welded steel and baked enamel cabinet solve weather problems. The condenser serves as a rain-trap . . . prevents water damage to electrical components, even when exterior installation is made.

Yes, *now's* the time to join the progressive dealers everywhere who are switching to Lennox—the No. 1 profit line.

So many ways to install . . . in new homes or old!


A low cost unit for any type of installation
In a carport
In closet, furred in
In dormer on hip roof
In attic with condenser and outside
On flat or pitched roof
On ground outside house
In attic

For more information about products advertised on this page use Information Center, page 24.

Aluminum-Clad Insulation--

(Concluded from preceding page)

ly 1,000 B.t.u. of cooling capacity is required to extract every pound of air-borne water. Since the normal load can run as high as 160 lbs. per day, it obviously pays to keep moisture to minimum, it was said.

Suggested Methods To Eliminate Excess Moisture

Several methods are suggested to eliminate excess moisture in homes. For air conditioned houses, aluminum foil barriers within the walls and ceilings are especially recommended to stop high-pressure outside vapor from infiltrating.

Water vapor, coming through the floor from a wet basement, will add to this load. An aluminum foil vapor barrier should be installed in the floor.

Last of the four design principles based on results of the two independent research projects is correct orientation of the house.

Major wall and glass areas should face north and south, to minimize effect of sun's radiant heat in summer and to take advantage of solar heat in winter.

Where the house cannot be properly oriented—shade trees, awnings, blinds, or shades are recommended. Light colored roofs also are useful in reflecting sun rays and in lessening the downward heat flow.

7-Point Check List

To insure maximum benefit from insulation, the following seven-point check list was suggested:

Attics and Ceilings: Insulate the top-floor ceiling, unless the attic is to be used as living area. In that case, insulate attic knee walls and header ceiling, instead. Provide for proper ventilation.

Dormers: Insulate all exposed wall and ceiling sections of all space around the window.

Side Walls: Insulate all outside walls. Be sure the vapor barrier faces inside the house.

Heated Areas, Adjacent to Unheated Areas: To complete the protection against heat loss, insulation should separate heated areas from unheated areas.

Floors Over Unheated Areas: Insulate overhanging floors, and floors over open porches, entrances, and unexcavated areas.

Slab-Type Floors: Heat loss is usually high at the edge of slab-type floors. It can be reduced substantially with perimeter insulation.

Slabs for Radiant Heating: When radiant heating coils are imbedded, insulation is essential under the edges of the slab.

ASHAE To Award Fahnestock Medal for 'Outstanding Work' In Air Environment

NEW YORK CITY—M. K. Fahnestock, research professor of mechanical engineering and chairman of the Physical Environment Unit of the University of Illinois, has been selected to receive the F. Paul Anderson Medal, highest award of the American Society of Heating & Air-Conditioning Engineers.

The presentation will be made by society president, John W. James, at the annual banquet concluding the 63rd annual meeting of the society, Feb. 25-28, 1957 in Chicago.

The F. Paul Anderson Medal is awarded by the society in recognition of outstanding work in the field of heating, ventilating, and air conditioning.

Prof. Fahnestock has made many contributions to the profession covering not only heating methods and equipment but he has also long been interested in the physiological aspects of air conditioning, it was pointed out. He has prepared or coauthored more than 20 papers in society publications and numerous other papers, it was explained.

In recent years he has given increasing attention to the university's Physical Environment Unit where studies are carried out on physiological problems dealing with effects of air environment on people.

A member of the society since 1927, Prof. Fahnestock was a member of the Council during 1952, 1953, and 1954. During his 29 years as a member he has served on over 12 committees; primarily those related to society research activities.

He is also a member of the American Society of Refrigerating Engineers and the American Society for Engineering Education.

Members of the 1956 F. Paul Anderson Award Committee are Chairman Peter B. Gordon, New York City; Albert Buenger, Boston; Walter L. Fleisher, New York City; L. N. Hunter, Johnstown, Pa.; and Albert J. Nesbitt, Philadelphia.

Looks Are Deceiving

Men Remove Furnace And Leave Her Cold

PITTSBURGH — Some slick thieves left a homeowner here with a cold house.

A few days after the woman had had a new furnace installed, two men came to her home, said they were from the furnace dealer, and would have to remove the furnace. The wrong model had been put in, they insisted.

"They looked like 'furnace men' and seemed to know their business," the woman told police later, after shivering for some time in the cold house.

She said she had become dubious when the men didn't return with a substitute model.

Her worst fears had been confirmed by her dealer who said he'd installed the right furnace in the first place.

Cooling Is Feature

PASADENA, Calif. — Refrigerated air conditioning throughout is a feature of all the custom homes costing $37,000 and up in Devenwood Heights Estates on the slopes above nearby Altadena, it was reported here.

Air Conditioning Firm Sold

OMAHA, Neb.—Cummings & Son, air conditioning firm at 521 N. 16th St., has been purchased by Air Conditioning Utilities, Inc., 2450 St. Marys Ave.

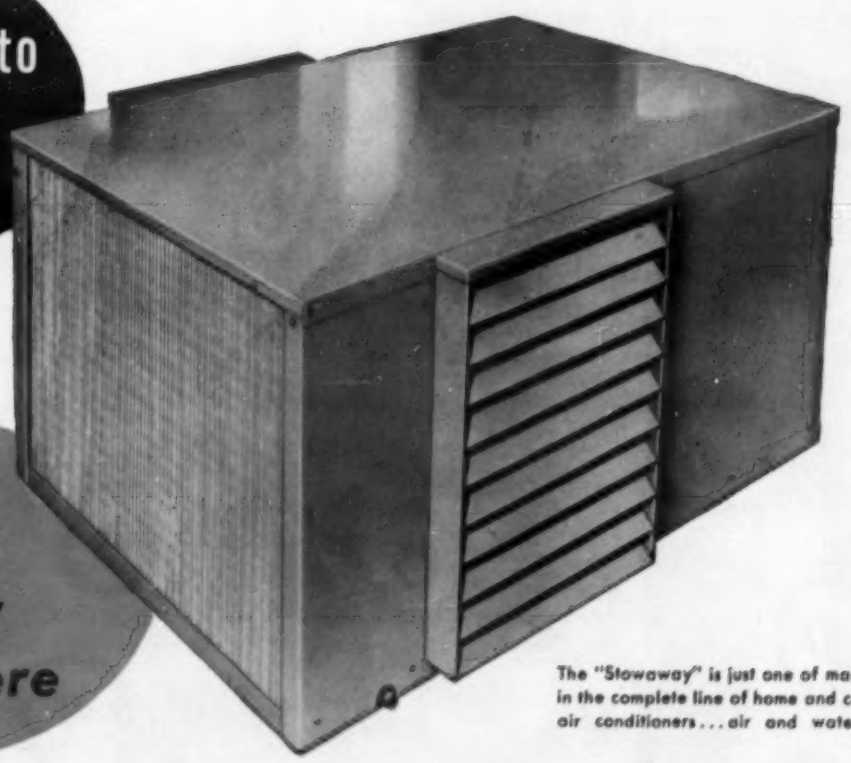
President Clarence Z. Goff of Air Conditioning Utilities said the newly-acquired firm will continue in business at its present location as a separate division.

LENNOX

LENNOX® "Stowaway"

INSTALLATION TIME

you SAVE up to $200 per ton!



can be installed practically anywhere

The "Stowaway" is just one of many models in the complete line of home and commercial air conditioners . . . air and water cooled.

LENNOX Industries Inc.

Established 1895

Marshalltown, Iowa • Columbus, Ohio
Syracuse, N. Y. • Ft. Worth, Texas
Decatur, Ga. • Los Angeles, California
Salt Lake City, Utah • Des Moines, Iowa
LENNOX Industries (Canada) Ltd.,
Toronto, Montreal and Calgary

CLIP AND MAIL Today!

LENNOX INDUSTRIES INC.
(Address nearest branch. See locations at left.)
Send me more information about the new Stowaway—and other Lennox air conditioning equipment. No obligation on my part.
COMPANY.....
ADDRESS.....
CITY..... STATE.....
MY NAME.....

For more information about products advertised on this page use Information Center, page 24.

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1)

ing may increase 388% in the next five years.

2. Commercial air conditioning may increase 167% in the next five years.

3. Automotive air conditioning may increase 1,000% in the next three years.

4. Air conditioning and refrigeration contractors and dealers should increase at least 15% in number within five years.

5. Suppliers to this industry can expect, conservatively, at least a 200% increase in their volume of sales to customers in the refrigeration and air conditioning business in the next few years. Perhaps a figure of 300% is more likely.

Great. Just wonderful for those of us in the business. Right?

Red Stoplight

Eh? How's that again?

There could be a fly in this ointment, or a Senegambian in the woodpile.

Where are we going to get the manpower to take care of this expansion?

Selling will be necessary, of course, because air conditioning is a specialty product. It needs explaining. It isn't bought off a shelf like TV sets, toasters, soap, and cigarettes. It's *sold.* Yet, there's a dearth of specialty salesmen in this country. And scant provision for recruiting and training them.

Of even more concern is the scarcity of engineers, installation and servicemen.

Air conditioning is a technical business. Design, installation, and service problems are critical. Much development work remains to be done at both the factory and local levels. At the same time incompetent field installations and service can wreak havoc on any contractor-dealer operation, reputation, and profits.

Contractors Worried

Almost every contractor-dealer you can shake a stick at is seeking worthy mechanics, engineers, estimators, and servicemen. Such skilled workers are exceedingly scarce. Nor are training programs turning them out nearly fast enough to meet present demand, let alone that of the future.

Question: How and where will the hundreds of *new* air conditioning contractor-dealers, which must be recruited to fulfill our industry's expansion promise, find men well acquainted with those thermodynamic principles of cooling, heating, and air movement so necessary to install and repair air conditioning equipment honestly and competently?

Such mechanics require sufficient academic background of mathematics and physical sciences to enable them to specify air movement and heat transfer equipment, along with practical knowledge of electricity, controls, and drafting for their field application work. They should be able to calculate air handling units, condensing units, condensers, towers, pumps, and electrical equipment, and be capable of sizing low velocity ductwork as well as proper grilles and registers for satisfactory air distribution.

As for manufacturers, whew! Competition amongst them for engineers is frantic. Our industry must compete with aircraft, atomics, electronics, ballistics, highways, automation, chemurgy, outerspace travel, and whatnot for experienced engineers and oncoming graduates of engineering colleges.

Obviously THIS is the bottleneck (trained manpower) which will handicap the palpitatingly predicted growth of the related air conditioning, heating, refrigeration, and home equipment industries.

Practical Ideas

Three things need to be done NOW by subscribers to AIR CONDITIONING & REFRIGERATION NEWS. Acting in concert to realize our industry's beautiful dream, and to help themselves get their share in the next few years, they can:

1. Arouse the interest of more young men and women in the engineering profession, and in the mechanical trades, *as they apply to our industry.* To do this they must build the prestige of these occupations, in addition to upping their remuneration. And they must *sell* mechanically skilled youth on their FUTURE in the air conditioning and home equipment business.

2. Provide facilities for training high school graduates in the arts of air conditioning. Epecially short is schooling for those installation and servicemen needed so badly by contractors. Perhaps this can be done in YOUR home town by enlisting the aid of Public Utilities, along with local chapters of engineering societies and contractor-dealer associations.

Toward these projects an industry-wide publicity campaign seems to be indicated.

Every contractor-dealer in our business should deem this technician-recruiting job the most important of his tasks.

3. Easiest and quickest thing we can do to advance our future in this respect is provide funds for "in being" schools (Purdue university's project—see editorial in Oct. 15 issue—is a case in point).

4. Next we can set up Scholarship Funds. These can be arranged by local chapters of national societies, members of which then can retain intimate contact with the beneficiaries, and hire them later.

5. Engineering instructors can be provided by our industry, also, for teacher-short technical colleges. Most engineering schools are working the night shift nowadays *when they have enough instructors.* Experienced engineers in our industry could conduct night classes once or twice a week and still hold their present jobs.

Moreover, every experienced man who retires at age 60 or 65 could happily be useful as an instructor in an Institution of Higher Learning. This is a prospect which deserves consideration, and a project which deserves momentum.

Pregnant New Idea

In connection with the "night shift" at engineering schools (caused by far too many students for available buildings and laboratories and professors) an appalling situation can rebound to our benefit. That "appalling situation" is the forced high mortality rate among engineer-

(Concluded on next page)

...SO HALSTEAD & MITCHELL ENGINEERS DESIGNED

AIR-COOLED CONDENSERS FOR SIMPLER MULTIPLE CIRCUITING

Selecting circuits and manifolding when connecting several air conditioning and refrigeration units to a single remote air-cooled condenser can be expensive unless the air-cooled condenser is designed for the simplicity that means low labor costs.

That's why it's real news that Halstead & Mitchell engineers have devised a remote air-cooled condenser especially for extra-easy multi-circuiting. As costs come down, your sales go up.

The Halstead & Mitchell Air-Cooled Condenser has been designed with several *no-cost* extras like this easier multiple circuiting. Only Halstead & Mitchell offers, for instance, "Turbu-Flo"® finned surface which provides added heat transfer to give you *extra-safe* capacity ratings. No need to worry when *you* recommend H & M.

There are extra years of working life, too, for Halstead & Mitchell's superiority in cooling tower steel protection has been used to keep air-cooled condensers free from rusting. The tubing assembly is self-reinforcing, locking out vibration before it starts.

Lifetime ball bearings and deep-pitch, slow-speed fans make for quiet operation. It's the assured operation you look for when you select Halstead & Mitchell, manufacturer of the industry's broadest line of water-saving devices for air conditioning and refrigeration.

Write for Bulletin AC-100

HALSTEAD & MITCHELL · BESSEMER BLDG. · PITTSBURGH 22, PA.

For more information about products advertised on this page use Information Center, page 24.

Tube

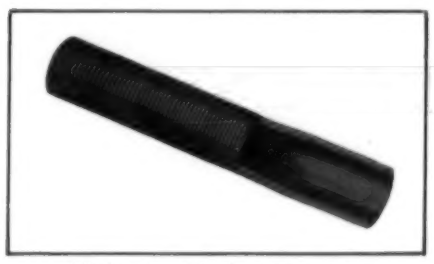
. . . INFORMATION
for manufacturers of air conditioning and refrigeration equipment

PUBLISHED BY WOLVERINE TUBE • DETROIT, MICHIGAN • DECEMBER 1956

HOW WOLVERINE TRUFIN TRANSFERS MORE BTU'S

Because it is available for both liquid and air-cooled operations, Wolverine Trufin is ideally suited for heat transfer applications in the refrigeration and air conditioning fields.

Its integral fins, which are squeezed directly from the tube wall, give Trufin Type S/T, for example, more than twice the effective heat transfer surface of plain tube—permit it to transfer more BTU's per foot of tube. As a result smaller condensers and heat exchangers that do a bigger job can now be designed.



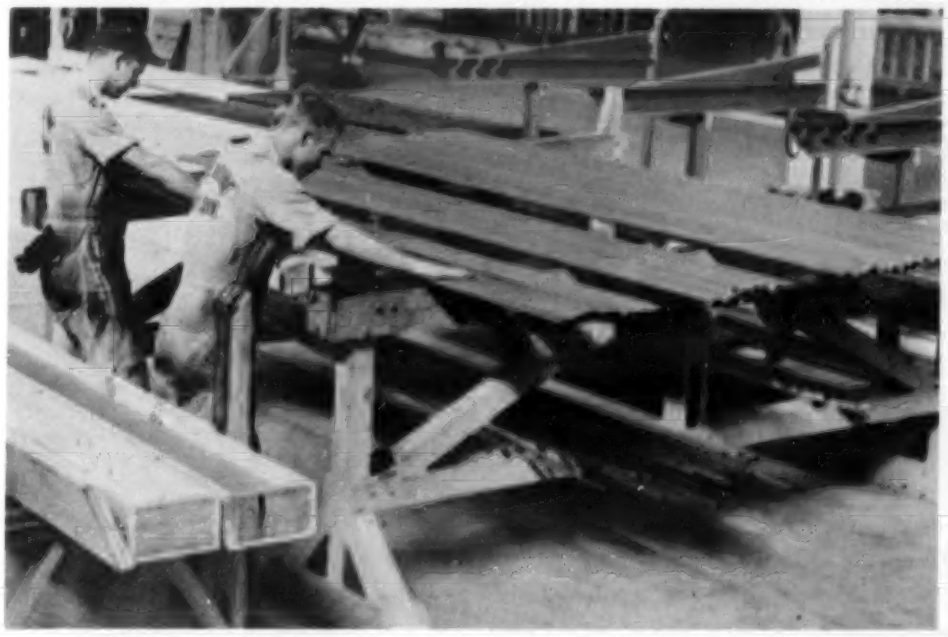
Wolverine Trufin Type S/T

Wolverine Trufin Type S/T—a low finned tube with 19 fins per inch—is expressly designed for shell and tube condensers. For air cooled operations, Trufin Types H/A and H/R with higher fins, present a maximum of surface to air currents. Type S/T is available in copper, copper-base alloys, aluminum and electric-welded steel. Types H/R and H/A are available in aluminum and copper.

EXTRUDED SHAPES, TOO

Also of value to refrigeration and air conditioning manufacturers is Wolverine's production of extruded aluminum shapes. Produced to exact customer specifications, these components can help cut machining, assembly and material requirements.

Wolverine Trufin is available in Canada through the Unifin Tube Company, London, Ontario.



Quality control from ore to finished product. Careful inspection is the keynote of Wolverine production. Refrigeration tube is clean, bright, dehydrated.

WOLVERINE REFRIGERATION PRODUCTS REFLECT KNOWLEDGE OF INDUSTRY

There are sound reasons for the wide acceptance won by Wolverine products from manufacturers of refrigeration and air conditioning equipment. During nearly 40 years in the tubing field, Wolverine has concentrated on the development of specialized products for these industries.

Only a company, for example, that knows air conditioning and refrigeration thoroughly could develop a product like Wolverine Trufin®—the integral finned tube. With Trufin, engineers can design smaller condensers with greatly increased heat transfer capacity.

From Wolverine's constant research program has come such other exclusive developments as the Wolverine Spun End Process† Wolverine Capilator®, Wolverine Roll-O-Tube® and a brand new and highly efficient end seal for refrigeration tube. These and other products are described in detail elsewhere on these pages.

Through its years of experience Wolverine knows that refrigeration and air conditioning manufacturers must have tubing that is consistent in temper, mirror-like in finish, scrupulously clean and absolutely dry. Because of this, Wolverine's inspection and quality control is second to none in the industry—insures tubing and tubular products that will meet every demand—give outstanding service.

Wolverine's growth has matched that of the industries it serves.

(see Wolverine, *page 2)*

PLAIN TUBE AVAILABLE IN MANY SIZES

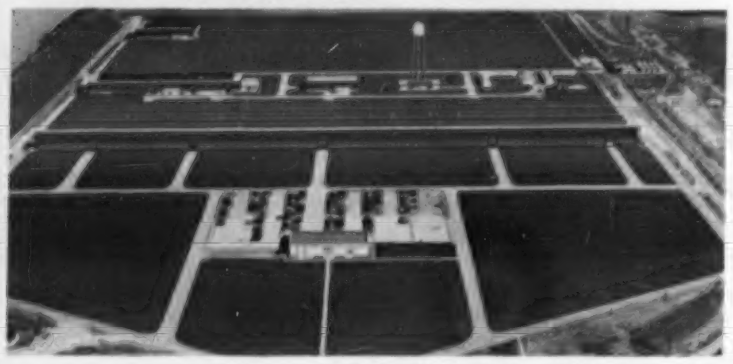
Wolverine commercial refrigeration tube is available in a wide range of sizes in both copper and aluminum, in straight lengths, coils and extra long coils.

This tubing, rigidly quality controlled, is clean, dry and consistent in temper. It is unexcelled for use in liquid and suction lines and in evaporator and condenser coils.

†A PATENTED PROCESS RE 22495

Tube

. . . INFORMATION
for manufacturers of air conditioning and refrigeration equipment



Wolverine's Mills at Decatur, Alabama (*left*) and Detroit, Michigan (*right*)

WOLVERINE *(continued from page 1)*

From two great plants—strategically located in Detroit, Michigan and Decatur, Alabama—comes a steady flow of tubing and allied tubular products to meet the needs of industry—assurance that Wolverine is well able to meet its production commitments.

The Decatur plant with its fine equipment, 300,000 square feet of floor space and 265 acres of grounds is known as "the world's most modern tube mill."

In addition to manufacturing tube, Wolverine also maintains complete facilities for the fabrication of tube and tubular shaped parts. Ready at all times to help customers solve their problems are the skilled technicians on Wolverine's Field Engineering Staff.

And these, in short, are but some of the reasons why Wolverine Tube has grown with the refrigeration industry.

They are also proof of Wolverine's belief that it is "Leading the way with research."

HELPFUL LITERATURE SENT FREE ON REQUEST

Complete product descriptions as well as helpful design, application and technical information are available in Wolverine's literature for refrigeration and air conditioning manufacturers. Included in the list of free booklets are the Trufin Catalog, Refrigeration Products Catalog, Aluminum Products Catalog, Spun End Catalog and the Tubemanship Book. Just jot down the title of any you want and drop it in the mail. We'll do the rest—pronto!

MORE WOLVERINE TIME SAVERS

Included in Wolverine's product line-up are many specialized items designed to save time and money for busy manufacturers.

For example, with its unique Spun End Process, Wolverine in one operation imparts a wide variety of contours and end treatments to tubular-shaped parts of copper or aluminum tubing. The result is one-piece accumulators, strainers and driers—to name but a few. Other Wolverine fabrication techniques include finning, coiling, bending, flaring, expanding, etc.

Wolverine's prefabricated evaporator sub-assembly is another real time saver. Consisting of a bunch-type aluminum coil, a one-piece Spun End aluminum accumulator and two aluminum-to-copper connectors this assembly is made to order as a means of freeing manpower, equipment and floor space for other duties.

If your product requires precision control in the metering of liquids, gases and air—always specify Wolverine Capilator—the tiny plug-drawn capillary tube. Capilator is held to exceptionally close tolerances—can be produced to meet customer flow specifications. Before shipment, Capilator is individually flow-tested—is washed, burred and the ends paper wrapped to insure absolute cleanliness.

ROLL-O-TUBE® HELPS SERVICE ENGINEERS

Wolverine Roll-O-Tube—copper refrigeration tube packaged in a round carton that can be used as a reel—is typical of the care and thought with which Wolverine designs specialized products.

All the refrigeration service engineer has to do is reel off the required length of tube, make his cut, and leave the balance of the tube in the carton protected against damage and dirt. Because of its convenient center hole, Roll-O-Tube is easy to carry, its zip-quick gummed tape makes opening easy and its contents are clearly marked in large easy-to-read print.

PLASTIC TUBE SEAL INSURES CLEAN TUBE

Still another product innovation: Wolverine equips refrigeration tube sold through wholesalers to service engineers with two plastic end seals. These end seals insure that all Wolverine refrigeration tube is kept clean and dry.

The handy plugs are easy to insert and withdraw, can be used again and again. Since the end seal has the same outside diameter as the tubing, the tube can be easily threaded through partitions. The seal also saves metal because it eliminates the necessity of cutting off the ends of crimped and soldered tube.

CALUMET & HECLA, INC.
CALUMET DIVISION
WOLVERINE TUBE DIVISION
FOREST INDUSTRIES DIVISION
GOODMAN LUMBER COMPANY
CALUMET & HECLA OF CANADA LIMITED
CANADA VULCANIZER AND EQUIPMENT COMPANY LIMITED

WOLVERINE TUBE
Division of Calumet & Hecla, Inc.
1413 CENTRAL AVENUE, DETROIT 9, MICHIGAN
Manufacturers of Quality-Controlled Tubing and Extruded Aluminum Shapes

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES
EXPORT DEPT., 13 E. 40TH ST., NEW YORK 16, N. Y. 5566 5612W92

Cafeteria Hot, Cold Food Banks Permit Step-Saving 'Storage' to Serving Area

HUDSON, N. Y.—To speed up food service, cut delays, and reduce food depreciation due to loss of color and flavor, McCall Refrigerator Corp. here has developed "ThermcCold Hot 'N Cold Food Banks."

Principle of the units in cafeteria type food service layouts is to bring step-saving "storage" between preparation area and service area, McCall explains.

A minimum of efficient workers can in "orderly fashion" using modern methods and proper costs, prepare hot, cold, or frozen foods and store the proper supply in the food banks to be withdrawn when the peak rush hour arrives, it was stated.

'Pass-Thru' or 'Wall' Models Offered

Offering this facility in either "Pass-Thru" or "Wall Bank" models, McCall says meats, fish, and fowl can be cooked ahead and stored with "oven-fresh flavor" for later use.

The Pass-Thru Hot 'N Cold Food banks come individually or in series for the small school or cafeteria. Two basic models TH70 and TH96 in choice of two depths are available.

Model TH70 has six doors, can be two-thirds cold and one-third hot or two units lined up in a series with one fully hot, the other cold.

Can Add Freezer

This model entirely hot can have a partition to separate meats and rolls with a separate thermostatic temperature control adjustment. To this can be added a freezer section to make it triple duty instead of double.

Model TH96 has eight doors, can be half hot and half cold, or three-fourths cold and one-fourth hot or any variation.

Wall Bank units can also be aligned individually or in series. Planned for mass feeding kitchens desiring storage efficiency, McCall offers this unit with doors on both sides. In a place where food is prepared in advance for sudden service, this type of installation provides quantities of pre-cooked foods.

Cabinet construction of the units is welded into one all metal rigid unit, eliminating wood entirely, it was explained. Exterior finishes are of stainless steel or white Dulux. Interior is of stainless steel.

When more than one standard cabinet is lined up in a series a principle of joining them is used so it appears to be one continuous lineup.

If desired, the lower section of a cold Food Bank may be used for storing an extra supply of milk close to dispensers, it was pointed out. New construction features have been applied where 20-qt. milk containers are used. A heavy stainless steel shield has been added over the lower door breaker strip to be used as a slide to avoid tearing breaker strips apart. Heavy stainless steel grids are used.

"HOT 'N COLD" food bank of the pass-through type is said to save steps between preparation and service areas. "ThermcCold" units are made by McCall Refrigerator Corp.

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from preceding page)

ing university freshmen and sophomores.

So tremendous are the pressures upon college and university registrars nowadays that far more freshmen are admitted than state-supported institutions can accommodate.

Their only recourse is to flunk out 30% to 40% or even more of the beginning classes.

Most of these flunkees (not flunkies!) have skills and aptitudes and backgrounds which our industry needs.

These dropped students should not be allowed to drift away into pumping gasoline, selling insurance, or organizing trips to the Moon. Said flunkees (not flunkies, mind you) should be salvaged by local contractors.

The latter could recruit them on the campus, just as the Atomic Energy Commission and giant corporations proselyte undergraduates of engineering colleges.

The time to get started on these urgent projects is NOW!

Wanna Live Forever?

How long you'll live depends on where you live in the United States, insurance statistics reveal. You'll live longest in Iowa, Colorado, Missouri, Nebraska, and the Dakotas.

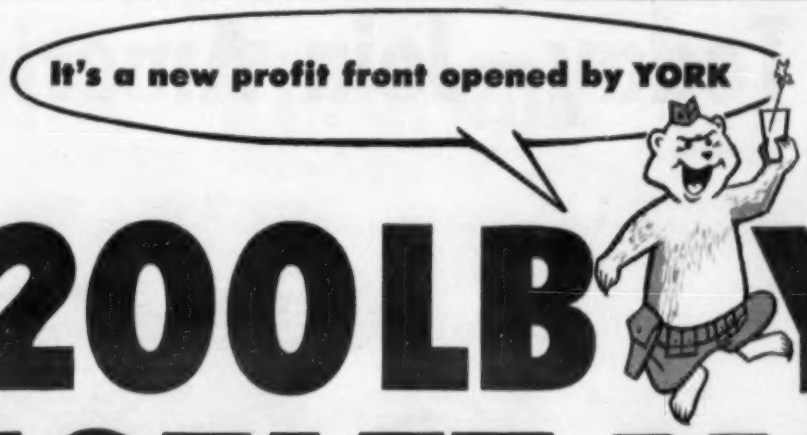
Anywhere else you're a dead duck too soon, probably.

Lowest life expectancy is found in Michigan, New York, Illinois, Ohio, and Pennsylvania.

As to California and Florida, the life insurance underwriters are withholding their bets. So many oldersters are moving there that previous life expectancies for inhabitants of those states are in confusion.

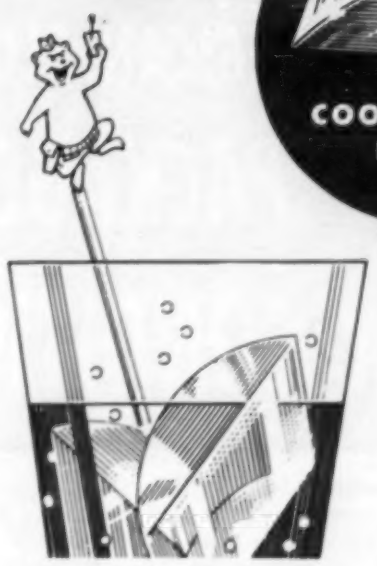
The next time you get into an argument, stop the discussion and institute this rule: Each person can speak for himself only after he has first restated the ideas of the previous speaker *accurately* and to that speaker's satisfaction.

Sounds simple, but it is one of the most difficult things to do. Once you are able to see the other man's point of view, your own comments will be drastically revised. You will find the emotion going out of the discussion, the differences being reduced, and the argument becoming rational and understandable. — *Harvard Business Review.*



200 LB YORK ICELET MAKER

Makes distinctive new kind of ice called ICELETS

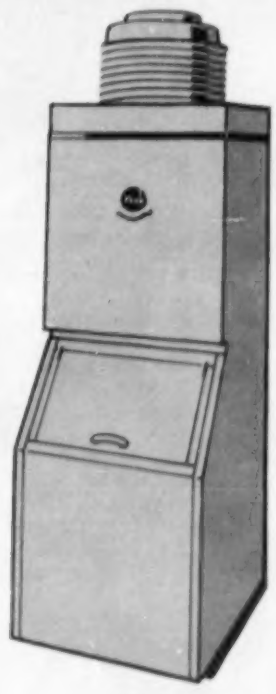


Has dramatic sales appeal for vast ice-user market!

York meets the growing demand for Ice Makers in the 200-lb. capacity range with a brand new kind of machine that makes a brand new kind of ice.

This newest automatic York Icemaker is *easy to sell* when you show the new "Icelets" with their gleaming curved shape. You can point out how they fit any size glass, make drinks look larger, cool faster. The York Ice Maker is *easy to install* by just making electric and water connections. Solves location and floor space problems because it's so compact: only 24" wide by 18" deep. Air cooled for economical operation. *Requires minimum service* because there are so few moving parts. No chains, cutter bars, or knives...hermetically sealed compressor.

Nets you bigger profit because you keep the profit instead of burning it up in service calls and installation problems. Contact your YORK Distributor now for the profit chance of a lifetime.



York—the quality name in air conditioning and refrigeration

Your FUTURE and FORTUNE Now Lies With York!

YORK CORPORATION, YORK, PA., Subsidiary of Borg-Warner

York refrigeration air conditioning

BW

Home Buyer's Heating Quiz

Prospective Homeowner Should Ask 11 Questions About Comfort Performance, Correct Heating Installation

CLEVELAND — An 11-question quiz for home buyers to help them find out whether the heating system has been correctly designed and installed to fit the house has been prepared by the National Warm Air Heating and Air Conditioning Association.

The association suggests that the prospective home buyer ask the builder the following questions about the comfort performance of his house. It also offers the answers the home buyer should expect.

Q.: What temperature control will the system maintain?

A.: For greater comfort enjoyment the heating system should operate without noticeable variations in room air temperature regardless of whether the automatic fuel burner is "on" or "off." As measured by a thermometer the room air temperature should not vary more than 1½° and preferably even less.

Q.: Will the system provide equal comfort in all rooms?

A.: The temperatures in all the rooms in the house should be about the same and should not vary from room to room more than from two-to-three degrees and preferably less.

Q.: What will the floor temperatures be?

A.: The heating system should be able to maintain floor temperatures of not less than 68°, even in the far outer corners of the room. Seventy degrees is even better. But floor temperatures should not exceed 80 to 85°.

Q.: What will be the temperature in the "sitting" zone?

A.: The "sitting" zone is in the lower third of the room—from ankle height to about 36 in. from the floor—which the body occupies when seated in a chair. The difference in temperature between these levels should not be more than 2½° when it is 30° outdoors and not more than 4° when the outdoor temperature is zero. A heating system's comfort performance is even better if it can produce temperature differences that are less than the ones given here.

Q.: What will be the temperature in the "standing" zone?

A.: The "standing" zone is that portion of the room space you occupy when standing—from ankle level to the top of the head, or from 5 to 6 ft. above floor level. The difference in room air temperature from ankle level to head top should not be more than 3° when it is 30° outdoors and not more than 4½° when it is zero outdoors.

Q.: Will the system deliver continuous comfort?

A.: A good heating system operates without noticeable variation in room temperatures throughout the day or night, week-in and week-out. It has been adjusted and balanced to deliver a continuous, even flow of heat regardless of how the weather conditions may change outside. There's no "chill and fever" heating with a good system . . . no "hot and cold" blasts.

Q.: Will there be any layers of hot and cold air in the rooms?

A.: Circulation of the warmed air is very important to comfort heating. When air circulation within the room stops, stratification and stagnation of room air starts and you immediately become uncomfortable because the warm air will rise to the ceiling and cold air will drop to the floor around your ankles. It is essential for your comfort that the room air be kept in constant and continuous circulation when the temperature outdoors is 40° or less.

Q.: Will there be any chilly floor drafts?

A.: You can't be comfortable in a draft. Drafts are caused by currents of cold air; cold air that has come into the house from the outside through the cracks around doors or windows, or room air that has been chilled by contact with cold outside walls and windows and has dropped to the floor like a cold waterfall.

If the heating system has been designed and installed in accordance with modern warm air perimeter heating concepts no cold drafts can form because the warm air from the furnace is introduced into the rooms at the base of the outside walls where it can blanket these potential draft sources, thus forestalling the development of drafts.

You can quickly identify whether or not the house is equipped with a perimeter system. Look for the warm air registers under the windows.

Q.: Will the heating system provide fresh air and ventilation?

A.: Fresh air is needed in the home during winter months for ventilation and to remove odors of living, such as cooking, smoking, etc. If the heating system is a quality system it will have incorporated into it provisions for bringing a controlled supply of fresh outdoor air into the house through the heating system where it can be warmed before being released into the rooms.

Q.: Will the heating system provide for controlled humidity?

A.: The amount of moisture that can be tolerated in a room will depend upon the construction of the house, the use of storm sash on windows, and outdoor temperatures.

The moisture content in the air must never be high enough to allow condensate to gather on the windows and yet it should never be so low as to cause drying out of skin surfaces and the mucuous membrane of eyes, nose, and throat.

A good heating system will be designed and equipped to introduce humidity into the rooms as required while preventing excessively high humidities from developing during cold weather through the introduction of a controlled supply of warmed outside air into the house.

Q.: Will the system adequately filter the warmed air?

A.: A good system will have adequate air filtering equipment.

Today—Join American Blower's

Modern styling for modern businesses! New 1957 American Blower Packaged Air Conditioners come in sizes for *all* commercial jobs. Every business is a prospect — offices, stores, restaurants, showrooms, small industrial plants. Join American Blower's big sales-maker program now. Profits are assured — you can stake your future on it!

For more information about products advertised on this page use Information Center, page 24.

Railroad Offices In Cheyenne To Be Cooled

CHEYENNE, Wyo. — Union Pacific officials have announced that the railroad's yard offices here will be air conditioned prior to the summer season of 1957.

Extensive air conditioning installations are planned in several control and office buildings in the yard.

Largest unit to be installed will be a 13-ton cooling tower to serve air conditioning units in the centralized traffic control building. The building will have two air conditioners of 5-ton capacity each and one unit of 3-ton capacity.

A 5-ton cooling tower will be installed at the yard office building. The freight house will be cooled by a 2-ton air conditioning system. Window type air conditioners will be installed in the special agent's office.

ASH&AE Honors Fleisher, Hunter, Kroeker, Leopold, and Lewis

NEW YORK CITY — Five prominent members of professional distinction, including three past presidents, recently were honored when the Council of the American Society of Heating & Air-Conditioning Engineers conferred on them the grade of Fellow.

The members are Walter L. Fleisher, New York City; L. N. Hunter, Johnstown, Pa.; J. Donald Kroeker, Portland, Ore.; Charles S. Leopold, Philadelphia; and Samuel R. Lewis, Chicago.

Society President John W. James, Chicago, will present the awards at the 63rd annual meeting, Feb. 25-28, 1957, at the Conrad Hilton, Chicago.

It is the first time the society has bestowed this honor. "The grade of Fellow is conferred only on those who have made substantial contributions through educational, inventive, research, or original work for the advancement of the arts and sciences of heating, ventilating, cooling, air conditioning, and the allied arts and sciences," it was explained.

Fleisher, an air conditioning pioneer who holds 100 American and foreign patents, has been a society member since 1941, became a Life Member in 1945 and was awarded the society's F. Paul Anderson Medal in 1953.

President of Air & Refrigeration Corp., New York, Fleisher is a contributor to various professional publications and a prominent speaker both in the United States and abroad. He also is a Fellow of ASRE.

Hunter, society president in 1954, has engaged in heating research for 30 years and is senior vice president for engineering and research, National-U.S. Radiator Corp. He has been a society member since 1936.

Designer of the two largest U.S. installations using reverse cycle refrigeration for heating, Kroeker is the owner of J. Donald Kroeker & Associates, Portland, Ore.

Kroeker has maintained a consulting engineering practice since 1936, exclusive of World War II service as a lieutenant colonel, Corps of Engineers, U. S. Army. He has authored numerous technical articles.

Leopold, air conditioning designer for the Pentagon and other notable buildings, is a recipient of the society's F. Paul Anderson Medal and the Franklin Institute, Philadelphia, Brown Medal for outstanding citizenship.

He is co-author of a study on air filtration for asthma-hay fever relief and author of many technical papers on tobacco smoke control, comfort conditions, panel cooling, and thermal storage. He is a Fellow, Royal Society of Arts, and past president, ASRE.

A 50-year member of the society in 1955, Lewis was the founder and president of the first society chapter (Illinois) in 1911. He served as society president in 1914, became a Life Member in 1943, and was awarded the F. Paul Anderson Medal in 1950.

The initiator of advanced methods, Lewis has written a number of technical books and was a consultant to the Cleveland, Columbus, and Toledo boards of education.

Air Curtain Admits More Customers—Halts Pests

GRAND RAPIDS, Mich.—An air curtain door accommodating more customers at one time was installed at Eberhard's 10th supermarket which opened here recently.

Conditioned air, blown from above, is drawn into a floor grating forming the curtain which keeps out cold, dust, insects, cats, and dogs, it was indicated.

Big Sales-Maker Program!

Sell new 1957 comfort-engineered Packaged Air Conditioners

The franchise with the future! Right now, not next spring or summer, is the right time to step into the wide-open, growing air-conditioning business.

With American Blower, you're backed by one of the most respected names in the industry — a leader in air-handling and conditioning for more than 75 years. You build for the future with the product customers want: the most modern packaged air conditioners on the market.

You have the kind of factory support that assures your success, with power-packed advertising, merchandising aids . . . sales training, warehousing plan — a complete sales-maker program!

Most modern units on the market! 1957 American Blower Packaged Air Conditioners are *all-new*, and tastefully styled to blend with any décor. There are sizes to fit *any* commercial job: 3 ton to 20 ton; install with ductwork or handsome plenum section. And you offer a 5-year factory warranty on the refrigeration circuit — a big American Blower sales-maker!

Thorough sales training! You get a full factory course on how to sell and service modern American Blower Packaged Air Conditioners. You learn the product in and out from skilled American Blower engineers. You learn how to sell them, who to sell them to, how to make installations — a big American Blower sales-maker!

Compelling national ads pave the way! Full-page ads in national magazines, like *The Saturday Evening Post, Newsweek, Business Week,* help to presell your customers for you — a big American Blower sales-maker!

Co-operative advertising plan! You get a complete advertising kit that tells you how to make the most of local advertising; gives you full, step-by-step instructions on preparing your own ads; contains ready-made ad-mat and product reprints; offers radio spot announcements, TV commercials; tells you how to order. And American Blower helps you pay for your advertising — a big American Blower sales-maker!

Colorful sales-promotion material! You get a complete sales package for prospecting by mail and at point of purchase; product-line folders, wall posters, direct-mail pieces, envelope stuffers, sample sales letters, customer brochures — a big American Blower sales-maker!

Hurry — installations are passing you by right now! Forward-looking businessmen are already looking around for air conditioners to beat the spring installation tie-up. So act today! Get in on profits *now* with American Blower's big sales-maker program. Clip and mail coupon for complete details. American Blower Division of American-Standard, Detroit 32, Michigan.

DISTRIBUTORS: There are still choice territories open for aggressive, well-qualified distributors to handle new American Blower Packaged Air Conditioners. Send for franchise data today!

AMERICAN BLOWER

Division of AMERICAN-Standard

THE FRANCHISE WITH THE FUTURE

American Blower
Division of American-Standard
Detroit 32, Michigan

Yes! I am interested in becoming a ☐ dealer ☐ distributor for American Blower Packaged Air Conditioners. Please have your representative call.

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

So. Calif. RACCA Hears Details of UA and SMW Pact

LOS ANGELES—Application of the new national agreement between the United Association and Sheet Metal Workers was detailed to members of Refrigeration & Air Conditioning Contractors Association of Southern California, Inc. at their regular November meeting by E. H. "Gene" Ballard, business manager of U. A.'s refrigeration fitters branch of Local 250.

Contractors were given the complete agreement in printed booklets, useful for defining situations correctly on the job.

Ballard went through the four articles of the agreement. Off-the-record hypothetical questions on situations the contractors would face in certain cases were asked by Attorney Henry B. Ely, executive secretary of RACCASC, and answered by Ballard by reference to the terms of the agreement.

Ballard said a question had already arisen between the refrigeration fitters and local sheet metal workers about the fresh air inlet when it is a boot or duct to the unit.

Sheet Metal Workers claim this has been traditionally done by them. The question is being amicably resolved between the locals.

Boiler & Refrigeration Dept. Of Chicago In New Location

CHICAGO—This city's Boiler & Refrigeration Inspection Dept. is now located at the City of Chicago Central Office building, it was announced recently.

Address of the building is 320 N. Clark St., Chicago 10, Ill. Telephone number is Delaware 7-5252, extensions 452, 453, 454, 455, and 456.

Lau Builds Plant Addition To Meet Almost Doubled Blower Demand

DAYTON — Some 250 suppliers and customers as well as nearly 1,000 employes, their wives, and families were guests of Lau Blower Co. at a two-day open house celebrating the completion and opening of a new $1,500,000 plant addition here.

The new plant is the biggest single addition in the company's 25-year history. The opening coincided with the silver anniversary of the firm.

Housing general offices, production facilities, a cafeteria, and the engineering department, the 57,200-sq. ft. building adjoins present factory and space in Dayton. The firm also has operating plants in Azusa, Calif., and Kitchener, Ont., Can.

With the new addition, Lau now owns or leases 403,716 sq. ft. or nearly 10 acres in Dayton. Some 450 are employed.

DISPLAY demonstrating Lau Blower Co.'s "Electro-Wheel" blower is explained by T. I. Byrd, executive vice president (third from left) to Ed Michel of Green Furnace Co., C. L. Foehl, Delco Appliance Div., General Motors Corp., and (far right) W. L. Carlson, also of Delco Appliances.

Fabricating area and capacity are nearly doubled with the new plant. New presses, welding equipment, and wheel building equipment are being added. Nearly quarters of a million dollars worth of new equipment is being installed.

Harold Faulkender, president, said the new plant is necessary to keep pace with the growing demand for blowers used in warm air heating furnaces and air conditioners plus the constantly rising output of the firm's household electric fans.

"We expect to increase our business depending on the general economies of the country," he said. "With present conditions, we will obtain this increase. We expect this increase to be between 10% and 15%."

Faulkender pointed out that sales of the company have nearly doubled since 1951. In that year sales totaled some $6,000,000. The annual rate is now over $11,000,000, he stated.

Mobile Air Purifier Developed To Aid Hospitals Eliminate Odor Problems

COLUMBUS, Ohio — Economy-minded, efficient hospital officials who seek more mileage from their equipment investments look to a new mobile air purification unit as a step in the right direction, it was reported here.

To help hospitals eliminate odor problems, the Barnebey-Cheney Co. has developed a lightweight unit, complete with wrought-iron stand, that can be moved from area-to-area and room-to-room.

Light-weight wrought-iron stands have been designed to make the air purifications units more mobile. Hospital officials can get multiple use out of each unit by moving it from room to room, as the need arises, it was explained.

H. L. Barnebey, vice president of the firm that manufactures activated charcoal and adsorption equipment for air conditioning, solvent recovery, gas purification, gas masks, liquid purification, water treatment, catalysis, chemical separations, waste disposal, and pollution elimination, said:

ACTIVATED CHARCOAL FRESHENS ROOM AIR

"Activated charcoal air purification is being used by many hospitals where there are irritating or odorous vapors and gases, or where air needs freshening because of stuffiness.

He listed autopsy rooms, cafeterias, cancer rooms, examination rooms, kitchens, operating rooms, recovery rooms, toilets, X-ray rooms among some of the places where air purification units have increased the efficiency of both large and small hospitals.

ODORS 'CAN IRRITATE PATIENTS, HURT RECOVERY'

"In a hospital the physical and mental well-being of the patients must be considered very carefully," he said. "Odors can be irritating to the body, disturbing to the mind, and, therefore, retard recovery. An activated carbon air purification system removes one of the major causes of discomfort and irritation.

"The system eliminates the necessity of heating or cooling outside air to be used for ventilation. It helps create a comfortable invigorating atmosphere that is condusive to rapid recovery.

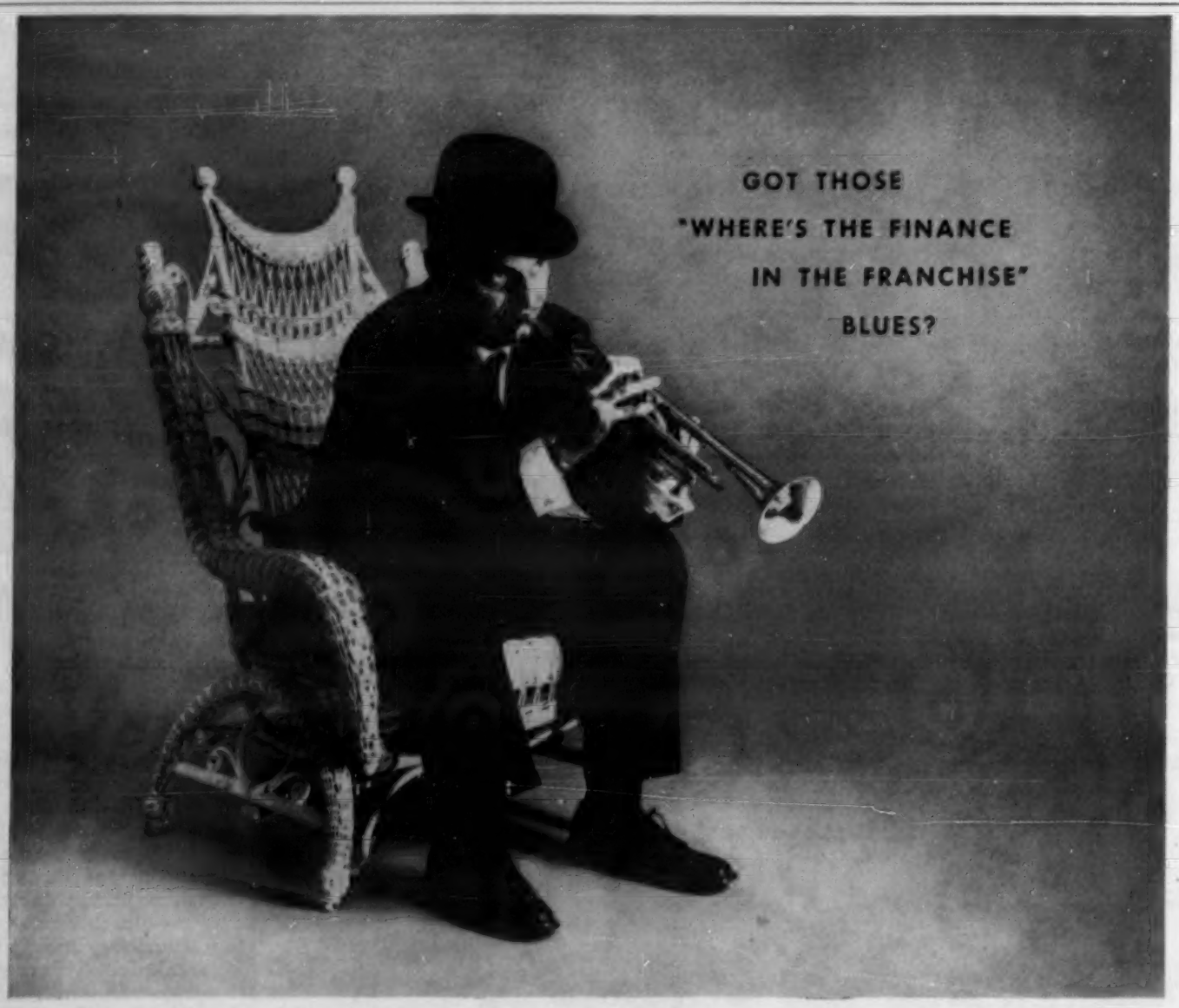
"By purifying the air, the hospital has more latitude in allowing freedom to the individual patient. Smoking, which might irritate other patients, is no longer a problem," Barnebey said.

He added that in addition to its use for air purifications, activated charcoal has numerous other important applications in hospitals.

"It readily removes contaminants from air or water and fulfills those needs where a universal adsorbent is desired, like accidental spills of hazardous liquids, antidote for poisons, atmospheric pollution elimination, dechlorination of water, food preservation, and many others," he continued.

Firm Chartered

BATON ROUGE, La.—Heating, Inc., Baton Rouge, Route 1, Flannery Rd., has been granted a charter by Secretary of State Wade Martin to deal in heating and refrigeration plants. Authorized capital stock is $20,000.



Go General Electric! Stock, sell and install G-E Packaged Air Conditioners at rock-bottom outlay!

LISTEN to what others say, then ask them to match these G-E Financing Plans—covering G.E.'s complete line of floor and ceiling packaged air conditioners.

Inventory Plan. Carry as many G-E units as you need on your floor or in warehouse of your choice until July 31st. You invest only 10% of purchase cost!

Installation Plan. You get your equipment cost when your customer signs the order and the balance of selling price when installation is completed. Your working capital goes further... your credit remains good—and you pay no interest charge.

Customer Payment Plans. (1) Easy Payment Plan for customers low on cash; (2) Skip Payment Plan for more pre-season sales; (3) Pay-As-You-Profit Plan with payments during hot months when G-E units are in use; (4) Earned Depreciation Plan with longer, more flexible terms for large installations.

CALL your G-E Packaged Air Conditioner distributor for the full story of a G-E dealership, or write: C. J. Rigby, General Electric Company, Commercial & Industrial Air Conditioning Dept., 5 Lawrence St., Bloomfield, N. J.

Packaged
AIR CONDITIONERS

Progress Is Our Most Important Product
GENERAL ELECTRIC

AIRO stands for
Speedy, dependable, world-wide service.
Air Conditioning and Refrigeration parts, equipment, supplies.
Write for Wholesale Catalog No. 56
AIRO SUPPLY CO.
2732 N. Ashland Ave., Chicago 14, Ill.

For more information about products advertised on this page use Information Center, page 24.

Many Sales May Be Direct to Dealer

Dealer Line Specialization, Upped Sales Volume Seen Needing More Working Money, Smaller Margins

PHILADELPHIA — The next decade will bring radical changes in the marketing of appliances, it was forecast here recently by G. T. Bogard, manager of utility relations for General Electric Co.'s Appliance & Television Receiver Div.

Addressing the local chapter of the American Marketing Association, Bogard predicted that by 1965, over 75% of consumer durable goods would go directly to dealers, by-passing the distributor's warehouse.

He also predicted that a "large percentage" of such goods would go directly to the consumer's home from the factory.

Sees Retailer Margins At About 22%

Bogard said that as a result of the increased by-passing of distributor warehousing, sales and inventory efficiency will reduce distributor gross margins from the current 12 to 15% to about 8% in 1965.

He stated that retailer margins would be in the 20 to 22% range.

The G-E official also predicted that the discount house "as we know it" will be eliminated by 1965.

"Before 1965," he said, "increasing sales volume, requiring greater working capital, and smaller gross margins, will lead to dealer specialization on one or two lines in order to buy a quantity at the best price."

Commenting on Bogard's forecast that a large percentage of consumer durables would go directly to the consumer from the factory, A. W. Bernsohn, managing director of the National Appliance & Radio-TV Dealers Association, said:

NARDA Official Thinks 'This Is One Mfrs. Program'

"While it is possible that certain factories have ambitious plans to take over much of the responsibility now in the hands of distributors and dealers, and thus shorten their margins, unless merchandise is made much more portable, free from service needs, and can be sold without personal sales effort, this is likely to remain just a blueprint in a single manufacturer's program rather than an industrywide reality."

Regarding Bogard's forecast on gross margins, Bernsohn stated, in part:

"A major responsibility of factories will be to call the turn on reduced margins to work out economically sound dealer programs that will motivate them to stay in business as the profit structure becomes decreasingly attractive."

Distributors Disagree

Most New York distributors who were queried on Bogard's statements commented that they would like to be operating on as much as the 12 to 15% gross margin figure he cited. An independent distributor claimed that factory branches operate on less and that independents require at least 11% gross margin but most are operating on lower gross margins.

In his talk, Bogard predicted that annual unit sales of consumer durables would increase by 75% in 1965, with total dollar sales double those of last year. He said this would result from expanding populations, more households, rising incomes, and a desire for more gracious living growing out of more leisure time.

Pointing out that higher incomes already lead families to want two cars, two TV sets, etc., Bogard said this trend will grow and that product innovation and planned obsolescence will add to turnover.

It was noted that all-electronic homes with pushbutton cooking, supersonic washing and dry cleaning, water conditioning, and the like are now on the drying boards.

Declaring that all-electric kitchen laundries will be sold as packages, Bogard stated: "We can count on the emergence of perhaps 3,000 to 4,000 electrical modernization dealers, who will sell complete package kitchens, packaged wiring, packaged air conditioning, built-in entertainment centers, and light conditioning.

"This new type of dealer will evolve out of the kitchen modernization dealer who now does kitchen remodeling work only."

Ad Men Named for Philco Account

NEW YORK CITY — Ben Duffy, president of Batten, Barton, Durstine & Osborn, Inc., has announced the personnel who will staff the agency's new account, Philco Corp.

Duffy said Nathan Tufts will be account supervisor. Lee G. Offen will be account executive for Philco's Electronics Div. Philip C. Carling will be account executive on room air conditioning, refrigerator, home freezer, and kitchen range units. Thomas P. Keating Jr. will handle home laundry lines.

Other assignments include Edward R. Hanslip, Jr. as account executive for merchandising and promotion; John Bunch as account executive for cooperative advertising; and Martin Rokeach on account service for television and radio, it was pointed out.

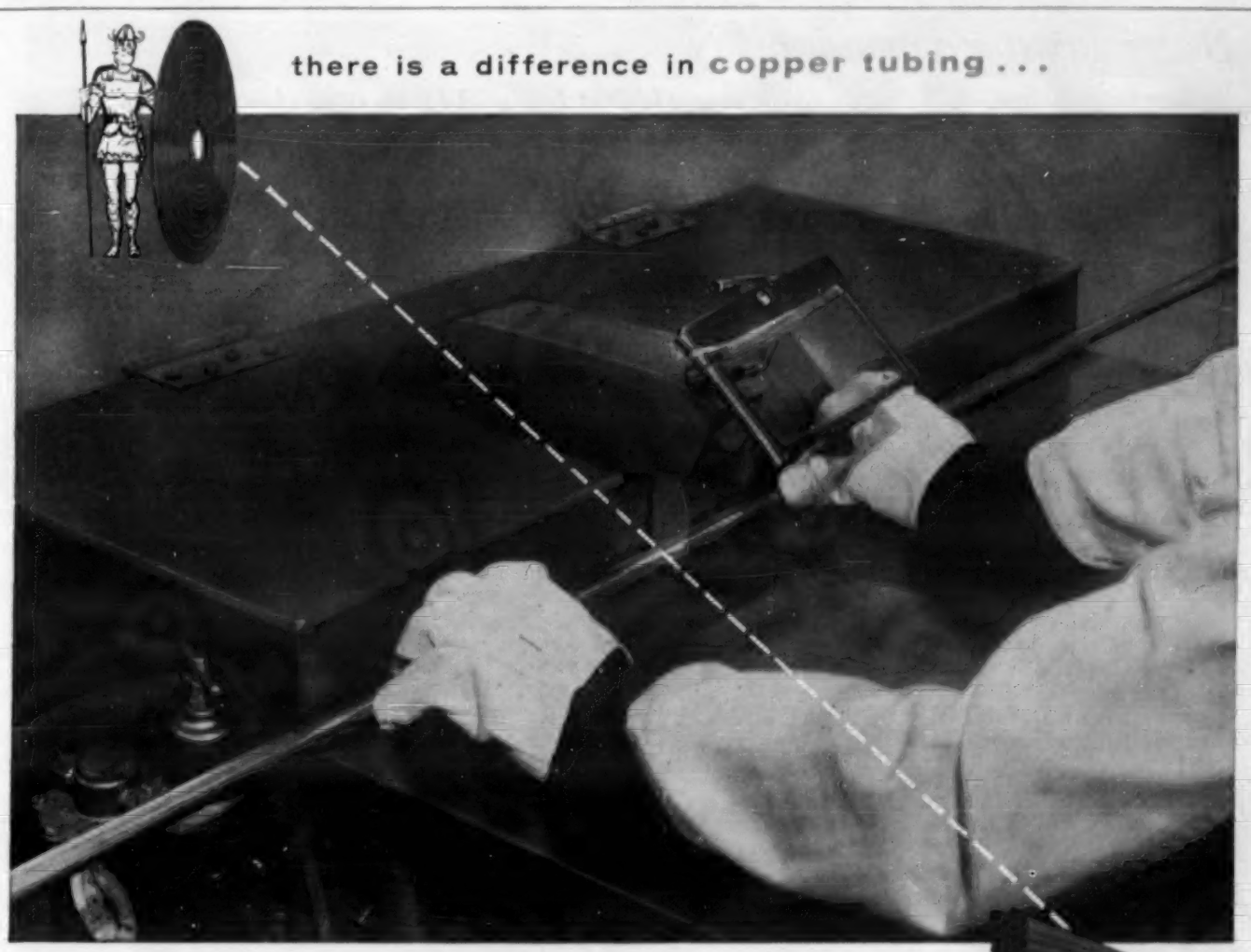
The BBDO-Philco association will become effective Jan. 1, 1957.

NARDA Minimum Dues Rate Set for Jan. 1

CHICAGO—Starting Jan. 1, 1957, dues will be changed for National Appliance & Radio-TV Dealers Association membership, President Don Gabbert announced.

At that time the rate will be $25, regardless of volume, for dealer members joining through recognized and accredited local associations; $36 for those doing $50,000 volume or less; $50 for those to $100,000; $75 to $250,000; $100 to $500,000; and $150 for those above $500,000.

This advances each dues bracket one step and creates the new $150 category, Gabbert explained.



Even the finish cut on Viking copper tubing is not just an ordinary cut . . . but a precision operation! To avoid the fabrication difficulties caused by rough, uneven ends, Viking designed a special tube cut-off saw which produces square, burr-free ends on Viking copper tubing. This makes Viking tubing immediately ready for installation . . . eliminates additional finishing costs.

In the Viking method of tube cut-off, the tubing is held square on the saw table while the saw moves carefully into the tube for the cut at a precontrolled rate of speed. Precise selection of the blade thickness, number of teeth and speed of the saw produces a clean, even cut in either hard or soft tubing.

This attention to small details has made Viking copper tubing consistently superior in quality . . . and has developed exclusive features of construction that make it ideal for so many applications. As a result, more and more manufacturers of air conditioning and refrigeration units and coils are using Viking as a principal source of supply for thin-wall copper tubing.

Viking copper tubing will continue to be the result of the efforts of skilled craftsmen, seeking always to create tubing that will do the job better . . . faster . . . and at lowest cost!

VIKING COPPER TUBE CO.
CLEVELAND 10, OHIO

PRECISION DRAWN SEAMLESS COPPER AND ALUMINUM TUBING

EXTRA STRENGTH
The proper kind of strength and ductility is vital in tubing used for refrigeration and air conditioning purposes. VIKING copper tubing possesses these properties to a far greater degree than other types of tubing. Its temper assures flawless fabrication.

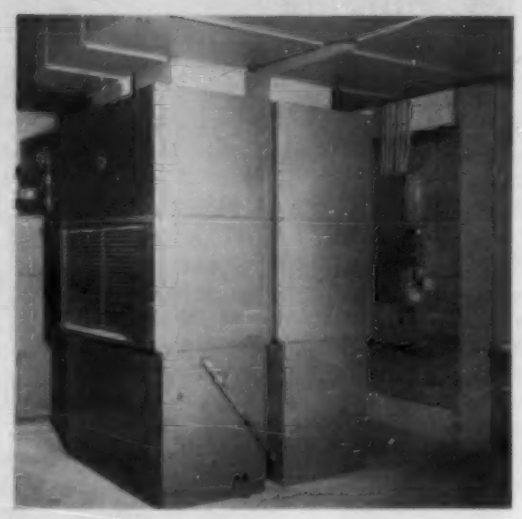
ABSOLUTE, UNVARYING STRAIGHTNESS
A battery of electrically controlled straightening machines keep VIKING copper tubing absolutely, unvaryingly straight. In addition, these machines precisely temper the tubing, imparting to it the correct surface hardness . . . assuring ease in fabrication resulting in substantial savings in time and labor.

ELECTRONIC QUALITY CONTROL
An electronic "Brain" detects the minutest flaw or imperfection in the walls of VIKING tubing . . . automatically discarding defective tubing. Trouble-free fabrication is virtually guaranteed — operational failures almost completely eliminated.

For more information about products advertised on this page use Information Center, page 24.

Specialty: Air Conditioning for Printing Plants

FORMERLY a storage area, this section is now the air conditioning control center for the Hessey Printing Co. in Nashville, Tenn.



THIS packaged air conditioner is installed in Nicholstone Book Bindery. Ductwork runs down the center of the building for good air distribution.

Firm Installs Packaged Units In 8 Nashville Shops In Short Period

NASHVILLE, Tenn. — Air conditioning printing plants has become almost a specialty with Central Air Conditioning and Heating Co. here.

Made aware that "humidity control will result in better quality control" and that employes will do better work under comfortable conditions, printers in the "Printing Center of the South" have been rapidly cooling their establishments.

Central, an Airtemp dealer, has air conditioned eight printing plants during the past few years, all with packaged units. All have satisfactorily met the needs of the firms purchasing them. They have resulted in new profits despite the initial skepticism of the customers.

In addition to employe comfort, it was pointed out to the printers, close humidity control during warm weather solves a number of printing problems.

Paper, protected from major humidity variations, remains in better and more uniform condition for use. Printing equipment, whether letterpress, offset, or rotogravure, keeps in better operating condition. The accumulation of excessive static electricity in paper stock is eliminated. Printing materials are permitted to dry evenly.

Fully Conditions 4-Story Bldg.

Taking heed, the McQuiddy Printing Co., one of the largest printing firms in Nashville, completely air conditioned the McQuiddy building, consisting of four floors with a total of 36,176 sq. ft. of floor space.

The basement floor contains the company's large presses as well as its lead melting room. Precision color work is done in the basement area which is air conditioned with an 11-ton "packaged" unit and 15-ton "packaged" unit tied into the same duct system.

The 11-ton unit is controlled by both a humidistat and a thermostat to remove moisture from the air during in-between seasons. The fresh air for the basement area is induced through this unit.

The main floor, at street level, contains office equipment, display area, store area, and office area. This floor is air conditioned by two 15-ton "packaged" units both utilizing an overhead duct system for air distribution. One unit takes care of the office display and store areas, and one unit handles the office area.

One half of the second floor is partitioned off to make up the lithography department. This area is air conditioned by a 15-ton "packaged" unit utilizing an overhead duct system.

Nozzles, Compressed Air Induce Moisture Into Air

Atomizing nozzles and compressed air are used to induce moisture into the air of this area during winter. This, too, is controlled by a humidistat. An 11-ton Airtemp "packaged" unit

(Concluded on next page)

Never-say-die dependability . . .

proved on the Alcan Highway!

The Alcan test run was supervised and certified by the AAA.

NEW TASK·FORCE 57 CHEVROLET TRUCKS

Six new '57 Chevy trucks tamed the rugged Alcan in one round-the-clock sprint. They covered the grueling run (normally a 72-hour trip) in less than 45 hours to prove their durability!

They took everything the truck-killing Alcan could dish out—and not a single unit dropped out or turned back due to mechanical failure! They turned in top scores for performance and economy, too! Look over the Alcan Highway Champs at your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

NO JOB TOO TOUGH FOR THE ALCAN CHAMPS!

You get Alcan-proved dependability in whatever lightweight model you choose. Put a new Chevy to work for you and take advantage of its extra stamina, its time- and money-saving ways!

PROVED ON THE ALCAN HIGHWAY... CHAMPS OF EVERY WEIGHT CLASS! CHEVROLET

E-Z-SEE LIQUID INDICATOR

NEW FLO INDICATOR FLAP SHOWS ALL FLOW CHANGES

Analyze flow, function of expansion valve, by means of E-Z to SEE sensitive flap, instantly responsive to variations in flow. Positively leak-proof — hundreds of thousands in use.

Available to Wholesalers everywhere

REMCO INCORPORTED ZELIENOPLE, PA.

For more information about products advertised on this page use Information Center, page 24.

OFFICE and plant area of the Cook Printing Co. are equipped with self-contained packaged air conditioners. Humidity control and filtering action of air conditioning is said to have reduced the problem of paper spoilage.

RIGID humidity control in McQuiddy Printing Co. bindery department enables printed pieces to dry uniformly and prevents finished material from losing "fresh" appearance.

Printing Plant Air Conditioning--

(Concluded from preceding page) handles the remainder of the second floor area.

The top floor comprises the bindery and contains a large amount of glass area. It is air conditioner by two "packaged" air conditioners, with a perimeter sheet metal duct system installed in each half of the top floor area in such a way as to blanket the entire outside wall area with cool, dehumidified air.

To air condition its entire plant, offices, display area, and store rooms the Hessey Printing Co., Nashville, utilizes one 11-hp. and two 15-hp. Airtemp "packaged" units.

These three conditioners are installed in a storage area with ducts running to the various sections of the plant. A forced draft cooling tower re-circulates the water.

The president of this firm commented that air conditioning has resulted in "a good 20%" year-round production increase. He pointed out that there is no comparison in the morale of his employes since air conditioning was installed. Prior to air conditioning, he said, excessive hot weather combined with the additional heat of machinery created such an uncomfortable condition that shop employes were very irritable.

The Benson Printing Co. plant, with approximately 30,000 sq. ft. of space, has a 96-ton air conditioning system consisting of Airtemp "packaged" units in 11 and 15-ton sizes.

Conditioning Overcomes Difficulty with Fumes

Prior to air conditioniing of its press room, Benson Printing was experiencing quite a bit of difficulty from fumes. This was especially noticable during the winter months when it was necessary to keep this area closed.

To offset this condition, one of the 11-ton "packaged" units in the press room area was put on a 100% fresh air basis. Outside air is brought in through the cooling coil and filter and then mixed in a duct with the conditioned air before entering the room.

Duct Heater Heats Air Prior to Mixing

In the wintertime, a gas-fired duct heater, operating off its own thermostat heats this air prior to mixing with the other air in the room. At the other end of the press room, an exhaust fan takes out a like amount of air to complete this system of ventilation. Since this system was installed no problem with fumes has come up.

The Nicholstone Book Bindery occupies a new building completed in the fall of 1954. Containing 5,145 sq. ft. of floor space, the building is served by two 15-ton "packaged" units.

The owner of the company felt that air conditioning would not be particularly beneficial profit-wise because the vast majority of his sales consisted of labor.

However, after only a few weeks of air conditioning operation he was stating that the equipment would pay its total cost plus a profit.

The owner found that because of ideal working conditions his people were working so much more than before and doing such a higher quality of work that there was no longer any question of air conditioning paying its own way.

The Cullom & Ghertner Nashville printing plant consists of approximately 50,000 sq. ft. of floor space. Brick walls divide the interior of the one floor building into several sections.

Each section, plus the company's cafeteria, is air conditioned with two or more Airtemp packaged units. In those production areas where two units have been located, one operates off a thermostat only and the other off both a thermostat and humidistat in order to provide finer humidity control.

The entire system was designed so that the majority of the units could be installed without ductwork.

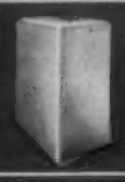
Other printers using Airtemp equipment installed by Central include the Cook Printing Co., Marshall & Bruce Co., and Dixie Electrotype Co., all located in Nashville.

FRIGIDAIRE

Summer-Winter Air Conditioners

COMMERCIAL - RESIDENTIAL

SELF-CONTAINED AIR CONDITIONERS (STORE TYPE)



SELF-CONTAINED AIR CONDITIONERS (ADD-ON TYPE)

SELF-CONTAINED YEAR-ROUND CONDITIONERS

REMOTE TYPE AIR CONDITIONERS

COOLING COILS

CONDENSING UNITS AND CONDENSERS

ROOM CONDITIONERS

GAS & OIL FURNACES

Get ready now...
Get going NOW...
with FRIGIDAIRE

Add up what Frigidaire can mean to you *now*—and in the boom season just ahead. The combined prestige and appeal of the FRIGIDAIRE name and reputation...

PLUS Frigidaire standards of quality throughout one of the world's most complete lines of summer-winter air conditioning equipment for both the commercial and residential markets...

PLUS Frigidaire promotion—at the national level—and with power-packed local campaigns and promotions in your own market...

PLUS the nation-wide network of Frigidaire Distributors, with one nearby to bring you products, counsel, sales help, training, and service "on the double."

Get ready *now*... get GOING now! For full facts phone your nearest Frigidaire Distributor or mail the coupon at once.

FRIGIDAIRE DIVISION AR-125
General Motors Corporation
Dayton 1, Ohio

Please furnish me complete information and 20-page catalog covering the complete 1957 line of Frigidaire Summer-Winter Air Conditioners for Commercial and Residential markets.

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE _____

They'll Do It Every Time

by

Jimmy Hatlo

BIGDOME JUST HAD TO HAVE HIS PRIVATE OFFICE HUSH-HUSHED ON ACCOUNTA A LOT OF TOP-SECRET DEALS GO ON THERE···
IT'S GOT TO BE ABSOLUTELY SOUNDPROOF··· IN WHICH TO CONDUCT CONFIDENTIAL OFFICE BUSINESS···
YES-OF COURSE
SO WHERE DOES HE CARRY ON THESE DEALS NOW? WHY, OUT IN THE GENERAL OFFICE, LOUD AND CLEAR···
OH, JUCKINS··· THAT KEISTER MERGER··· I'VE DECIDED TO GO THRU WITH IT···BUT KEEP IT UNDER YOUR HAT! WHERE ARE THE CONTRACTS?
THANX AND A TIP OF THE HATLO HAT TO "JONES", EL SEGUNDO, CALIF.

Mr. Contractor: Meet Your Strong Ally—Insulation

Insulation is among the least glamorous components of home equipment products.

You don't see it, feel it, taste it, touch it, or hear much about it. Hence the vast majority of homeowners and home equipment buyers are unaware of its importance. (In that connection, a leading sales executive has this framed motto on the wall behind his desk: "To the man who's never heard of you, you don't exist").

We can't blame insulation producers for this situation. Realizing the publicity limitations of their hidden product, hitherto they've advertised modestly (and somewhat ineffectually, as they themselves admit) to purchasing agents, engineers, and a scattered ill-defined "general public."

Until recently few opportunities for *identification with consumers* have popped up on the scene of their endeavors, or *pepped* up insulation advertising.

Vaguely it is realized that good insulation checkmates noise and lends efficiency to refrigerators, freezers, ranges, air conditioners, commercial refrigeration, and houses themselves. Hitherto, however, insulation promotion men have been stymied by an inability to prove *actual* operation cost savings in a "take-hold" manner. (Possibly that's why old-time iceboxes were insulated by "Michigan air," it might be footnoted).

At this moment INSULATION at long last *does* enjoy an opportunity to toot its own horn. New home builders who desire air conditioning are the logical target for this honest ballyhoo—along with the dealers and contractors who install air conditioning. In 1957 insulation suppliers, in good conscience, can help young couples save money (and be progressive) by pointing out truly tested and proven benefits of logically insulated homes.

Moreover, with noise being such a problem in residential air conditioning, they have an added advantage to tout.

Leading suppliers of insulation, such as Owens-Corning, Alcoa, Dow, Johns-Manville, and Armstrong now are aware that:

(1) Nearly everybody *wants* personal air conditioning;

(2) Relatively few homeowners *think* they can afford it;

(3) Insulation *can bridge the gap* between these desires and misinformation.

Alcoa, for example, has released exciting information on reflective (aluminum foil) insulation in homes—based on studies made by the U. S. Bureau of Standards and Pennsylvania State university. Those data reveal that properly designed and specified household insulation cuts costs of home heating and cooling remarkably.

Armstrong is demonstrating the ingenuity of the insulation industry by providing specialized varieties of insulation (such as its Armaflex sheet) for all types of air conditioning installations.

Furthermore, Owens-Corning-Fiberglas researchers declare that a well-insulated 1,200-sq. ft. house can be year-round acclimated for $140 a year or less. (Heating costs: $80; cooling costs: $60). This Owens-Corning-Fiberglas research program includes 160 builders in 54 cities, a total of 172 houses. Prices of these studied homes varied from $10,000 to $40,000 (with the majority in the $15,000-$20,000 price bracket).

Other manufacturers predict that $10 a month eventually should be the "mean" cost of operating a fully year-round air conditioned home which is properly insulated.

On test-tube air conditioned homes, six inches of insulation have been required for attic floor and ceiling; three inches in the walls, and two inches around foundations or slab floors in the North Central and New England areas. Midwestern recommendations are equivalent. In the south, an extra inch of insulation is suggested for the ceiling.

Owens-Corning additionally recommends double glazing or storm sash on all windows. And on extreme areas of glass like picture windows, retaining storm sash or awning in summer may account for at least a 15% saving in radiated heat. Tinted glass also reduces operating cost of all-year comfort installations.

Proper insulation of an air conditioned home will save owners from $146 to $383 per year, these researchers reveal!

Now *here* is something air conditioning salesmen can get their teeth into—likewise insulation salesmen. For the growth of both industries, here's hoping these studies are promoted for all they're worth. And that's a-plenty!

AN INTERNATIONAL INSTITUTION • SUBSCRIBERS ALL OVER THE WORLD

Trade Mark reg. U.S. Pat. Office; Est. 1926

AIR CONDITIONING & REFRIGERATION NEWS

Copyright 1956, Business News Publishing Co.

F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

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QUERIES SHOW 'NEWS' GETS READ EVERYWHERE

For Worth Air Conditioning Association
Fort Worth, Texas

Editor:

In your Oct. 22 issue you had a write up "Fort Worth Group Offers Detailed Estimate Sheet to Keep Bids In Line." Your excellent "Newspaper of the Industry" sure gets around as evidenced by the numerous inquiries we have had from Washington (state), California, Missouri, Illinois, Ohio, Pennsylvania, New Jersey, New York, North Carolina, South Carolina, and last, some from Texas.

The Estimate Sheet was prepared by a committee from this association working with contractors interested in small commercial and residential installations.

This association is primarily interested in doing all it can to better the industry and we believe that this Estimate Sheet will be of great help to contractors as well as engineers.

I am pleased to state we also have had many compliments on same and have furnished copies to all with permission to reproduce if they so desire.

Thanking you for an excellent write up.

EDWIN D. MCCOY,
Executive Secretary

YORK PICTURE WINDS UP WRONG SIDE UP—SORRY

York Corp.
St. Louis 2, Mo.

Editor:

Please refer to your Nov. 19 issue, page 10. We realize that York is turning the whole industry upside down with our new line of units but please—don't take us so literally.

R. W. PHILLIPS,
District Commercial Sales Supervisor

Editor's Note: We appreciate Mr. Phillips' good humored acceptance of this publisher's nightmare — the upside down picture. Although a cut may start out rightside up in the editorial department, there are many opportunities for it to be turned over before it is published. We regret any inconvenience this may have caused.

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New Company's 'Dyfoam' Plastic Insulating Material Produced In Slab Form Said To Cut Erection Costs

Using 12-ft.-long, "Dyfoam" slabs, two workmen "quickly erect a free-standing insulating wall," says Dyfoam Corp., which recently started production of the new plastic insulating material.

NEW CASTLE, Pa.—Dyfoam Corp. here recently began production of "Dyfoam," a new plastic insulating material in a slab form, claimed to provide effective insulation at lower erection costs than conventional low temperature insulating materials.

Chief advantage of Dyfoam, according to officials of the new corporation, is its size. It is produced in continuous slabs up to any practical length. The slabs are 12 in. and 24 in. wide, and range from ½ in. to 8 in. or more in thickness.

"Dyfoam's greater length and width reduces the number of joints in any insulating structure," the company said. "Since joints are insulation weak spots, this results in improved insulation."

Erection of any insulating structure requires handling fewer Dyfoam slabs, which company officials say results in a considerable labor savings.

"In addition to its practical size, Dyfoam's low thermal conductivity (K-factor) of .24 @ 40° mean; its light weight—.9-1.25 lbs./cu. ft.; and water repellent qualities suit it particularly for floors, walls, and ceilings of low temperature structures and transport," the announcement stated.

Nils O. Ohlson, president of the new firm, said Dyfoam will be produced primarily as insulation for cold storage warehouses, refrigerated trucks and railroad cars, sectional refrigerators, general building construction, and residential use.

Dyfoam Corp. is now creating national sales outlets through distributor contractors.

"Specified adhesives strongly adhere slabs of the material to all types of building materials and to other slabs of Dyfoam," it was stated. "It can be painted or finished with a variety of attractive, functional, and economical materials.

"Raw material for Dyfoam is 'Dylite' expanded polystyrene produced by Koppers Co., Inc. These small cellular beads are expanded and forced together in an extrusion process to form a continuous slab of controllable density. The slabs are formed and cut to specified length, width, and thickness, and trimmed square on the edges."

Other properties of Dyfoam reported by the company are: water absorption, less than .02% by volume, all on the surface only; compressive strength, 15 lbs./sq. in.; coefficient of expansion, .000015/Deg.F.; moisture vapor transmission, less than 1.0 perm. inch.

The material is odorless, and will not support animal or plant life, and it is also resistant to acids and alkalies, according to the company.

Dyfoam is produced in two grades: Dyfoam-Regular and Dyfoam-Self Extinguishing.

Other officers in the company are vice president and treasurer, Addison A. Vestal of T. Mellon & Sons; vice president, George W. Meek, New York consulting engineer; secretary, Samuel McCune of the Pittsburgh law firm of Kirkpatrick, Pomeroy, Lockhart & Johnson; and sales manager, John Bassett, formerly of Pittsburgh Corning Corp.

The exclusive manufacturing process used by Dyfoam was developed in Sweden by the insulation firm A/B W.M.B. Lars Norrhede, a Swedish engineer and inventor who assisted in the developments, has been appointed plant manager.

Philco Div. Names Nagy

PHILADELPHIA — Appointment of William J. Nagy as advertising and promotion manager, Accessory Div., Philco Corp., was announced by Rayford E. Nugent, general manager, Accessory Div.

Nagy, formerly electronic district manager for the Southeast Div., succeeds William J. Horn, recently named advertising manager of Philco's Appliance Div.

New Dayton Company Appointed by Marco

WOMELSDORF, Pa. — Marco Industries, Inc., producer of fractional horsepower motors, now is being represented in a four-state area by a newly formed sales engineering company, Row-Con, Inc., Dayton, Ohio, according to G. Russell Eddy, Marco executive vice president.

Row-Con will service Kentucky, southern Indiana, Ohio (except the immediate Cleveland territory), and the area immediately surrounding Pittsburgh.

Principals in the new company are Harold Rowland and Irvin A. Conley, both of Dayton. They formerly served as general sales manager and district sales manager, electric motor division, A. O. Smith Corp., respectively.

"TICKETS" TO PROSPERITY
MODEL 205C — adjustable superheat. F12, F22, Methyl. Capacity: 2 and 3 tons F12.
MODEL 206C — fixed superheat. F12, F22 or Methyl. Capacity: 0 to 1 tons F12.
MODEL 207C — adjustable superheat. F12, F22 or Methyl. Capacity: ½ and 1 ton F12.
MODEL 214— Air-conditioning. Capacity: 1, 2 & 3 tons, F12, 2, 3 & 5 tons, F22.
MODEL 209 — adjustable pressure limit and superheat. F12, F22 or Methyl. In ½, 1, 1½ tons F12.
THERMOSTATIC EXPANSION VALVES
MODEL 217 — adjustable superheat. Solder connections. Capacity: 2 to 12.5 tons F12; 3 to 19 tons F22.
MODEL 218— adjustable superheat. F12 (16-19-25 tons) F22 (25-30-40 tons.) Available with pressure limit.
MODEL 104D — open-type adjustment. Solder connections. F12, F22, Methyl, and Sulphur. Capacity: ½ ton F12.
MODEL 204C —with graduated pressure scale. F12, F22; Methyl or Sulphur. Capacity: ½ ton F12.
MODEL 304C —F12, F22; Methyl and Sulphur. Capacity: 1 ton F12.
THERMOSTATIC EXPANSION VALVES
AUTOMATIC EXPANSION VALVES
MODEL 408—Trap-It. 3 sizes. Connections ¼" to ⅝" SAE.
MODEL 410—Trap-Dri. 5 sizes. Connections ¼" to ⅝" SAE, ½" O.D. & 1⅛" O.D. Solder.
MODEL 239-A — Constant pressure type — responds to and controls valve inlet pressure. Ranges: 0 to 40, 40 to 130, 80 to 210 lbs.
MODEL 238— evaporator pressure regulator. All non-corrosive refrigerants. Capacity: 1 ton F12.
MODEL 237 — crankcase pressure regulator. Adjustable, 0-40 psi. 2 cap. ranges. 1½ & 3 tons nom. F12.
FILTERS AND DRIERS
REGULATING VALVES
MODEL 73 —multi-purpose. Three orifice sizes, four body styles. Strainer screen.
MODEL 67 —sweat or pipe body style. All-purpose. Soft, or metal-to-metal seat.
MODEL 270 —refrigerant. Suitable for hot-gas defrost. ⅜" or ½" orifice.
MODEL 70NAX — refrigerant. Pilot operated, 9/16" orifice.
MODEL 70N —refrigerant. Large capacity. Pilot operated, 1" orifice.
SOLENOID VALVES
FLARE TYPE — ⅜" or ⅝" flare-nut. ½, 1, 1½, 2, and 3 tons capacity, F12. Standard 2, 3, 4 — ¼" O.D. outlets.
SOLDER TYPE — for Model 216C, & 217E & 218E TXV's and gen. service. ⅝" O.D. thru 1⅛" O.D. Any number and size of outlets. Capacity thru 40 tons, F12.
DISTRIBUTORS
MODEL 65 — for all non-corrosive refrigerants. Sizes: ⅜ x ½ & ¾" sliding seat (65 to 200 psi, 165 to 300 psi); 1, 1¼" double ceramic seat (70 to 170 psi, 160 to 240 psi).
WATER VALVES

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SWIFT
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1 Glass St., Elmira, N.Y.

Peerless Offers 'Flush' Hinged Door Case

——KEY NO. F-1220——

MT. VERNON, N. Y.—Peerless Equipment Sales here recently offered model BK-8, a new "flush" hinged door bakery case with large "easy-gliding" glass doors.

Illuminated, the case is said to offer maximum visibility, has stainless steel exterior, and white interior. It comes in two sizes—6 and 8 ft. It can be plugged into an electrical outlet and used with no other connections required.

Self-Contained 'Bilt-In' Combination Offered

——KEY NO. F-1221——

LOS ANGELES — A complete, self-contained "Bilt-In" refrigerator-freezer has been introduced by Thermador Electrical Mfg. Co. here.

Dubbed the "Masterpiece," the unit measures 70½ in. high by 35½ in. wide and 24 in. deep, and has 15.5 sq. ft. of shelf area. The 10.2-cu. ft. refrigerator and 4-cu. ft. freezer compartment are said to be properly proportioned for practical home use.

Self-defrosting, the refrigerator compartment is at eye-level, features full-width, 100% roll-out shelves, roll-out dairy shelf and crisper, meatkeeper, and door storage equipped with thermostatically controlled butter keeper and egg keepers.

Separate freezer compartment stores up to 140 lbs. of frozen foods. A large freezer basket rolls out full depth without tipping or disengaging, the company said. Pull-out shelf holds frozen desserts and ice cream. Racks on the door provide storage space for juices and packaged foods.

Three mechanical ice trays and a tray with 12 individual plastic cube-cups are provided. Safety neon indicator light glows constantly, the firm stated. If off, it warns of power failure or variance in temperature.

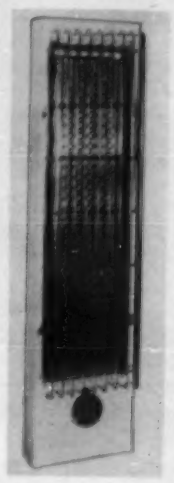
Both compartments have automatic, non-glare interior lighting, acid-resistant porcelain enamel interiors, stainless steel front.

Available with right or left-hand doors, handles are of polished brass. The "balanced-cold" hermetically sealed refrigerating system is designed for built-ins.

Heatmore Has Vertical Radiant Heat Panel

——KEY NO. F-1224——

BROOKLYN — A new line of fully automatic, vertical-mounted ceramic radiant heat panels in chrome or oven-baked white enamel steel housing was recently announced here by Heatmore, Inc.



Specifically designed for supplemental or complete heating of bathrooms, the panels also can provide full-length "sun-like" radiant heat in kitchens, dressing rooms, or any room where wall space is limited, the company stated.

Available in 500, 750, or 1,000 watts, the surface-mounted units, which are 7½ in. wide, 31½ in. high, and 2 in. deep, are pre-wired and require no dismantling for installation, it was explained.

Units hang from keyhole slots in the wall, have a knockout for simple connections directly to the housing, require no holes or special tools. Recessed panels have similar dimensions and are almost flush with wall. A built-in thermostat and indicating pilot light is standard.

A nickel-chromium wire is molded inside a special ⅝-in. thick ceramic composition. Models are also available in electric baseboard, wall-mounted, and ceiling-suspended panels as well as plug-in portable and wall-hanging heaters.

Double Service Unit Produced by Leitner

——KEY NO. F-1225——

CHICAGO — "Duo-Serv" double service equipment unit featuring "Super Visicold Convertible" was introduced here recently by Leitner Equipment Co., the company announced.

These units can be used as island installations or kitchen dividers to enable attendants to serve maximum possible number of dinners in a given time, the company claims.

The Super Visicold Convertible refrigerated display case has "Touch-Control" double glass sliding doors. "Flo-Aire" refrigeration has "Finger-Tip Conversion" from half to full refrigeration, it was stated.

Leitner Duo-Serv equipment has 16-gauge stainless steel tops, on the all-steel units which are electrically welded. Polished stainless steel interiors and exposed exterior makes for easy cleaning, the firm pointed out.

Round, Square Stepped Diffusers Developed

——KEY NO. F-1222——

CLEVELAND—New round and square step-down ceiling diffusers were recently designed for fast, economical installation by Auer Register Co. here.

Just four screws hold the diffuser and built-in damper assembly to the duct. The spring-loaded "Balancing Bell" damper featured on these diffusers permits easy system balancing in addition to full shut-off without quadrant dampers, the company said.

Step-down vanes are engineered to provide effective air distribution pattern. Maximum free area with minimum air resistance is provided by straight edge design of the vanes. Recirculation of room air is induced by curved contour vane design.

Both the round and square styles are available without damper control for use as return air faces on all perimeter systems.

Refrigerated Display Cabinet Introduced

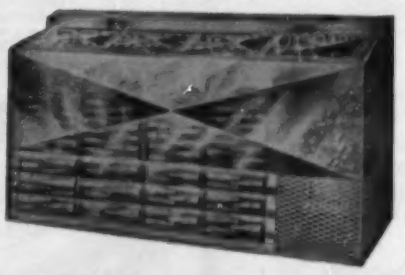
——KEY NO. F-1223——

COLUMBIA, Pa. — A plastic-door see-through refrigerated display cabinet called the "Visi-Cooler" was introduced here recently by United Sound & Signal Co.

It is claimed that sales of the specific beverage sold jump considerably after installation of this unit. In addition to having its contents fully illuminated, the Visi-Cooler glows and carries a suitable trademark message on front and sides.

Expressly designed to refrigerate and display carbonated beverages, the units are now sold to most elements of the bottling industry, the manufacturer said.

"A CASE OF COOL JUDGMENT"



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For more information about products advertised on this page use Information Center, page 24.

Trane Unit Ventilates, Heats Large Areas

——KEY NO. F-1226——

LA CROSSE, Wis.—A new large capacity "Torrivent" heating and ventilating unit for conditioning large areas was recently announced by the Trane Co. here.

Featuring sectionalized design, the Torrivent makes 275 distinct combinations possible in nine sizes, the firm noted. Units range from a basic model for introduction of ventilation air to a deluxe model that provides heating, ventilation, and humidification.

A range of final temperatures is provided by the wide coil selection for comfort and process applications alike, Trane said. Uses include curing-drying, fog removal, exhaust of contaminated air, and moisture control.

Louver fin discharge grille for variable air discharge patterns is offered. Capacities range from 1,150 to 36,000 c.f.m. air delivery, and from 50,000 to 1,900,000 B.t.u.

Dunhill Offers Creamer Unit

——KEY NO. F-1227——

NEW YORK CITY — Dunhill Soda Fountain Corp. recently introduced model 1200 creamer unit which is designed "to provide maximum ice cream service in a minimum of space."

Measuring 31 in. deep over-all by 5 ft. long, capacity of the unit is 20 gal. Rail section holds six syrup jars, three crushed fruit jars and covers, spoon holder, and a chipped-ice pan. Five of the syrup jars are equipped with regular pumps, the sixth with a heavy-duty chocolate pump, the company explained.

Of all steel construction with 100% vegetable corkboard insulation throughout, model 1200 features a 100% dry instantaneous cooler, it was noted. Separate water, soda, and refrigerant coils are cast in aluminum block for protection against freeze-up damage.

Aluminum block "hold-over" is said to prevent short cycling and no surge tank or oil separator is necessary. Cooler is installed in the rear section of the bottle storage compartment. Capacity is 15 gal. an hour and temperature is independently controlled, it was pointed out.

The unit is 30¾ in. high while working height is 32 in.

Bottle Cooler Combined With Direct Draw Tap

——KEY NO. F-1228——

HUDSON, Wis.—Combination of a bottle cooler with a direct draw tap "in one compact cabinet" has been announced by Nor-Lake, Inc. here.

Known as the "Club Bar," the unit is available in two models—the larger (3KCB) provides space for two kegs on tap and a third in storage, with refrigeration area for 18 bottle cases, while the smaller model (1KCB) holds the same number of cases but has only one keg on tap.

This new design embodies the "cold dome" feature now standard in all Nor-Lake direct draw taps, "which prohibits more than 1° of temperature variation between the bottom of the box and the top of the insulated dome," the company said. The Club Bar is completely self-contained and refrigerated, and it handles cold water as well as bottled beverages and beer kegs.

Kelvinator hermetically-sealed condensing units are recessed on the right side, and drain is at left of the bar. Both models are available with air-gas blenders.

Quicfrez Combination Has 14 Cu. Ft. of Space

——KEY NO. F-1229——

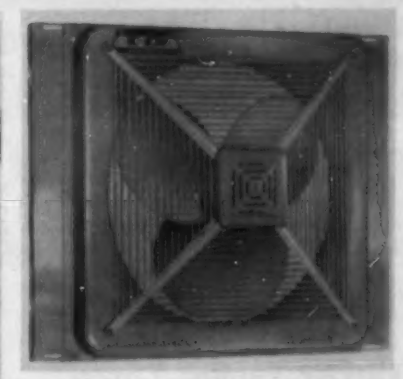
FOND DU LAC, Wis.—Quicfrez, Inc. here recently made available a new combination refrigerator-freezer with space totaling 14 cu. ft.

Model QRF-86 has an 8-cu. ft. refrigerator and 6-cu. ft. freezer, will carry a suggested list price of $599.

Freezing compartment features zero storage with coils at bottom and top of the freezer, a fast-freezing shelf, and a 9.5-sq. ft. net shelf area, the company announced.

Refrigerator compartment has slide-out shelves, meatkeeper, vegetable crisper, door shelves, and fully automatic defrosting, it was stated.

Unit measures 60⅝ in. high, 32⅝ in. wide, and 30¼ in. deep, and has green interior and gold trim.



Window Fan Features 'Square' Styling

——KEY NO. F-12210——

CHICAGO—A pushbutton controlled, electrically reversible 20-in. window fan featuring a new "Square" styling is now available in the Berns "Air King" line to retail for $49.95.

The SQ20PB has three speeds and delivers 4,000 circulating c.f.m. on high speed, the company said. It has adjustable side panels.

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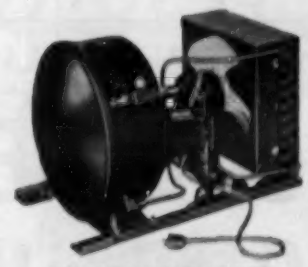
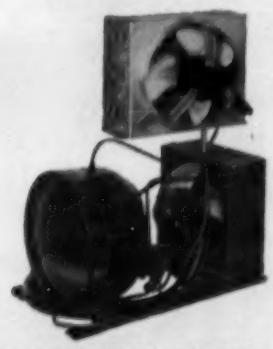


CONDENSING UNITS

COMPRESSORS



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Burnham Radiators Pictured, Described

——KEY NO. R-1220——

ZANESVILLE, Ohio — A four-page colored folder covering the new Burnham electric steam radiator with thermostatic control was issued here recently by Burnham Corp.

Illustrating and describing the new unit, the folder gives specifications and prices.

Carrier Catalog Covers Heating, Ventilating Line

——KEY NO. R-1221——

SYRACUSE, N. Y. — An improved and expanded line of heating and ventilating products is described in a new catalog published by Carrier Corp.

The 12-page booklet (46PQRV-72) is designed to show the versatility of the units in their application for large area buildings, schools, auditoriums, and gymnasiums.

The new Carrier heating and ventilating line offers 72 coil capacities and coil arrangements in six different model sizes. Output of the full line ranges from 47,000 to nearly 2,000,000 B.t.u. and from 1,500 to 32,000 c.f.m., the company said.

In addition to charts and tables showing hot water ratings, steam ratings, and fan performance, the brochure describes a new "forward curved" fan wheel which is said to provide quiet, efficient performance even at relatively low speeds.

A special section of the Carrier catalog shows how to select the proper heating and ventilating units for various applications. The units can be floor mounted or suspended from the wall or ceiling.

New Bulletin Describes 'Solderless Wiring'

——KEY NO. R-1222——

CLEVELAND — A new eight-page technical bulletin entitled "Solderless Wiring Devices" which illustrates, describes, and furnishes sizes and specification data on new time-saving solderless terminals and connectors for crimping to wire extremities has been published by Electric Terminals Corp. here.

Amana Shows 6 Ways To Install Built-Ins

——KEY NO. R-1223——

AMANA, Iowa — Six of the many ways that the new Amana built-in freezers and refrigerators can be installed are described and illustrated in a manual recently published by Amana Refrigeration, Inc.

The 12-page booklet uses drawings, diagrams, and brief text to show the "how-to-do-it" facts of installing the new Amana built-ins into the wall, above base cabinets, under counter tops, or stacked one above the other.

Rotary Boosters Is Bulletin Topic

——KEY NO. R-1224——

YORK, Pa. — A four-page bulletin on the application of rotary boosters to two-stage refrigerating systems is now available from Freezing Equipment Sales, Inc.

"Illustrating how to increase freezing capacity, or lower temperatures, without increasing total connected horsepower or raising unit power cost, the bulletin describes FES-Fuller Booster operating characteristics under many conditions," the company said.

Included in the bulletin (FES-22956) are seven photographs, three drawings, and a table. The table graphically outlines the results possible by plant conversion from a one-stage to a two-stage refrigerating system.

Firewel Catalog Features New Colors, Improvements

——KEY NO. R-1225——

BUFFALO — Styling changes, new colors, and improvements in the complete Firewel line of warm air furnaces are featured in the new, redesigned catalog of products recently released by Firewel Co., Inc. here.

The catalog, WA 356, illustrates the salient engineering features of both the Firewel gas-fired and oil-fired "Hi-Boy," "Lo-Boy," "Counter-Flo," and horizontal units. Complete engineering information and data include charts, dimensions, and operating capacities of all units.

Adelta Chart Shows Heating, Cooling Items

——KEY NO. R-1226——

PHILADELPHIA—New, three-color, 24 by 38-in. wall chart illustrating and describing the more than 81 items in the firm's unit cartoned line of standardizing pipe, duct, and fittings for residential heating and cooling installations was recently issued by Adelta Mfg. Co., Inc. here.

A reference guide that can be hung on walls or doors is said to make it easier for contractors to determine needs and sizes and to order directly from the chart, according to Adelta.

Items shown include stack heads, wall stack fittings, wall stack, trunk duct, trunk elbows and fittings, register boots and stack boots, trunk takeoffs and reducers, extended plenum take-offs, trunk end take-offs, floor register boxes, dampers, plenum fittings, perimeter tees and fittings, furnace pipe, elbows, and tees, gas vents, furnace pipe fittings, and miscellaneous items, it was pointed out.

Milk, Dairy Products Cabinets Illustrated

——KEY NO. R-1227——

NEW MILFORD, Pa. — A new catalog illustrating the complete line of refrigerated cabinets for milk and dairy products made by the company was recently issued by Refrigeration Div., Brewer-Titchener Corp. here.

Highlighted are two new BTC milk coolers, designed to keep milk below critical temperatures. In addition, the catalog features the recently introduced "Spot Merchandiser," a 7.8-cu. ft. cabinet which holds 200 1-qt. Canco paper milk cartons.

Two BTC merchandisers, designed to function as complete dairy departments also are described. Larger of the two units, model D-141, has 14.1-cu. ft. capacity and holds 471 quart milk cartons. The other, model D-065, holds 278 quart cartons within its 6.5-cu. ft. interior.

Catalogs Trends In Industrial Lift Trucks

——KEY NO. R-1228——

PORTLAND, Ore.—A new 12-page brochure of industrial lift trucks made by Hyster Co. here shows latest trends in unit design, the manufacturer announced recently.

Illustrated, the two-color booklet is meant for quick reference of 25 different Hyster industrial truck models ranging in capacity from 1,000 to 30,000 lbs.

Spotlighted are the firm's new 3,000, 4,000, and 5,000-lb. capacity series on pneumatic tires, the "Space Saver" series of the same capacity on cushion tires, and the "Monomast" lift trucks.

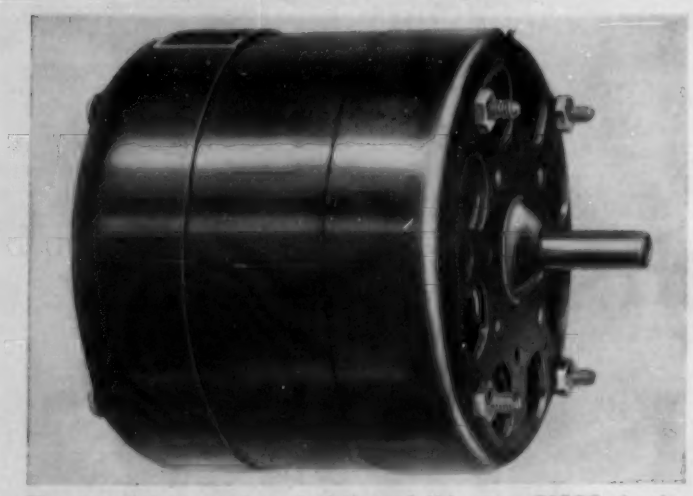
Model KE "Karry Krane" 10,000-lb. capacity yard crane and several lift truck attachments are also described.

FASCO NEWS

FASCO INDUSTRIES INC. ROCHESTER 2, N.Y.

GOOD NEWS for Manufacturers of HOME AIR CONDITIONING UNITS UNIT HEATERS...FANS...PUMPS

New Fasco 4-Pole, Shaded-Pole Motor Incorporates Advanced Design Features which Provide Smoother, Quieter Operation ...Longer Service Life with Maintenance-Free Performance...



The speed torque characteristics of this new FASCO 4-pole, shaded-pole Motor are especially designed for multi-speed operation . . . single, two or three-speed. Available with rubber ring mounting.

Fasco experience and Fasco ingenuity pay off again . . . this time with a new 4-pole, shaded-pole Motor especially designed and built for use in Unit Heaters, Home Air Conditioning Units, Fans and Pumps. The new model is available in fractional H.P. ratings from 1/25 to 1/10.

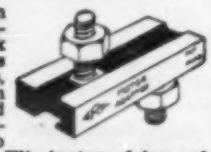
Extremely quiet in operation, this new Motor employs a unique pole configuration *(an exclusive Fasco design feature)*, which produces better flux distribution, resulting in higher efficiencies and better power factors. In addition, it incorporates the use of vastly improved sintered oil-less bearings in conjunction with larger-capacity, high-quality oil-retaining wicks . . . a combination which assures quieter operation, longer life and maintenance-free performance. Another notable feature is a new wound-in-place coil design which provides better copper efficiency.

This catalog gives complete data and specifications on FASCO Fractional H.P. Motors and Blowers. A copy is yours for the asking. Write Fasco Industries, Inc., Rochester 2, New York.

WHAT ARE YOUR MOTOR REQUIREMENTS?

If you are in the market for a shaded-pole, fractional H.P. Motor or Blower, here's a point worth remembering—our years of specialization in this field combined with our tremendous production facilities—plus the great demand for FASCO products, make them available at prices which permit you to maintain a strong competitive position. Chances are, you'll find just the right motor or blower here at FASCO. If not, we will analyze your requirements and build one to meet your specifications. In either case, FASCO quality . . . for long life and dependability costs no more. Write, wire or call us and we will dispatch one of our field engineering specialists to your plant to study your particular application.

MOTOR BASE ADAPTERS Sell Many Other Items



Keep them in stock. Servicemen will pick up adapters and motors, carry them in their cars, and complete service on the job in one call. Eliminates delay of having motors away for rebuilding. Adapters are easy to install, fit any base. No motor shaft too long or too short. They also bring you more sales in motors, belts, pulleys, controls, etc.

SIZES FOR ⅓ to 3 H.P. Inclusive

Engineering Research Associates, Inc.
3475 East Nine-Mile Road
Hazel Park, Michigan

RSES Elects 1957 Officers, Directors

NEW OFFICERS AND DIRECTORS of the Refrigeration Service Engineers Society elected at the 19th annual convention in Kansas City, Mo. recently are (from l. to r.): FRONT ROW: John H. Spence, St. Louis, chairman, education and examining board; Charles G. Bell, Fresno, Calif., treasurer; Al Manning, Newark, N. J., 2nd vice president; Marshall Lock, Toronto, Ont., Can., retiring president; William E. Tierney, Worcester, Mass., president; George R. Klahn, St. Paul, Minn., 1st vice president; Orville W. Brown, N. Miami, Fla., director; and Robert Duke, San Antonio, director. BACK ROW: Paul Reed, Milwaukee, educational director; Denver Wathen, Tulsa, Okla., director; William V. Peek, Birmingham, Ala., director; Paul Derby, Tacoma, Wash., director; Carl Howenstine, Canton, Ohio, director; Wally W. Braatz, Milwaukee, director; Kenneth Young, San Diego, Calif., sergeant at arms; and J. Lawrence Hall, director. Not appearing in the picture are H. T. McDermott, Chicago, secretary; William Smallwood, Toronto, director; and A. J. Pike, St. John, N. B., Can., director.

Marketing Authority Advises

There Is No 'One Way' To Move Goods to the Field So Deal With Problems Your Product Can Solve, Not Low Price Alone

NEW ORLEANS—There is no "one way" to move goods to the field.

That's the primary thing for the man involved with marketing of goods today to keep in mind, declared Eugene B. Mapel, vice president, Barrington Associates, Inc., in speaking to the Air Conditioning & Refrigeration Wholesalers Association convention on the subject "The Marketing Job Today."

Among the provocative thoughts thrown out by this marketing authority were:

. . . It is no longer possible to depend on "belly-to-belly" salesmanship alone to solve marketing problems.

. . . A good mental exercise for manufacturers and wholesalers might be to tackle the problem of "How could we move our goods to our customers without salesmen."

. . . New approaches to marketing don't involve the matter of replacing salesmen, but of using all tools at your command to move goods.

. . . We should all thank the "man in the gray flannel suit" (the advertising profession) for the job done in building acceptance for our products.

. . . There can be ways to distribute automobiles through other than the traditional channels, and this might come about if the dealers cease to perform the functions of customer relations and service for which they are paid.

. . . There is a continual "change of climate" going on in the business world. A story is told of a successful manufacturer of milk vending machines, who entered the milk vending field. Tried and traditional sales and advertising methods failed, but when the firm began to work with milk producers on the surplus problem, and school and industrial groups on feeding problems, a market was found. The conclusion from this story: deal with the problems that your product can solve in the field.

. . . Low price alone is not the only factor in moving goods.

Marsh Develops Gauge To Show Peak Pressure Over Any Given Period

SKOKIE, Ill. — To relieve servicemen of constant gauge watching, Marsh Instrument Co. has developed a gauge that will show the maximum pressure reached over any given period of time.

By means of a check valve in the socket of the gauge, the pressure applied is trapped inside the Bourdon tube. The indicating hand is stopped on the dial at the point of maximum pressure.

The pointer may be returned to zero by pressing a button on the side of the gauge socket, releasing the pressure. Standard dial range is 0 to 400 lbs. p.s.i. pressure.

Another product recently introduced by Marsh is the No. 56 water regulating valve that will adjust to pressures from 60 to 270 lbs. p.s.i. This wide range, the company says, will permit its use on systems using any common refrigerant except ammonia.

A knurled adjustment cap at the bottom of the valve permits on the job adjustment without use of wrench or screwdriver.

The direct acting, diaphragm valve may be mounted in any position without the use of mounting brackets. It may be manually flushed and serviced without breaking connections.

Welch Named General Mgr. of G-E Small Integral Motor Dept.

FORT WAYNE, Ind. — John F. Welch has been appointed general manager of the General Electric Co.'s Small Integral Motor Dept. here, announces H. A. MacKinnon, vice president.

Welch joined General Electric in 1934. After various assignments at the company's Fort Wayne plant, he was transferred to Cleveland on the test engineering program. There he was assigned to the Product Service Div. of the Specialty Appliance Sales Dept. as a specialist on commercial refrigeration and air conditioning units.

On July 1, 1956, Welch was appointed manager of manufacturing of the Small Integral Motor Dept., the position he has held until now.

MUELLER BRASS CO.

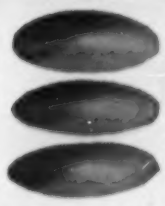
ONLY Linemaster

DIAPHRAGM LINE VALVES HAVE THESE 2 EXCLUSIVE FEATURES

This completely redesigned valve is available in five straight-thru and angle types with flare, solder and M. P. T. connections. See them at your wholesalers . . . Take some along . . . and on your next service call install them . . . You can't do better for your customers.

1. SUPER SEALING

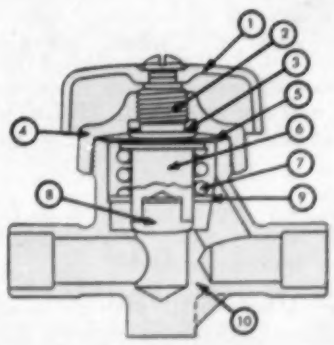
A phosphor bronze diaphragm between two stainless steel diaphragms gives the LINEMASTER an unbeatable combination for super sealing and long life. Diaphragms pressure wear tested for thousands of openings and closings without failure.



2: SUPER SEATING

In the LINEMASTER, tough, resilient molded nylon seat disc insures positive shutoff even if foreign material is lodged against the seating surface. Mueller Brass Co. pioneered and proved the superiority of nylon for "super seating".

PLUS 10 Ways better in design and construction



1. FORGED BRASS HANDWHEEL combines modern appearance and ease of operation
2. UPPER OPERATING SCREW produced from special, high strength bronze
3. NYLON SEAL eliminates operating screw seizure
4. FORGED BRASS BONNET has big husky wrench flats
5. PHOSPHOR BRONZE DIAPHRAGM and two stainless steel diaphragms service tested for thousands of openings and closings
6. STEM ASSEMBLY is guided to assure perfect seat alignment
7. CADMIUM PLATED STEEL SPRING assures positive return action of stem assembly
8. NYLON SEAT DISC is tough and dependable
9. SPRING SUPPORT RING made from solid brass
10. FORGED BRASS BODY sturdy, full flow design

FREE! ➡

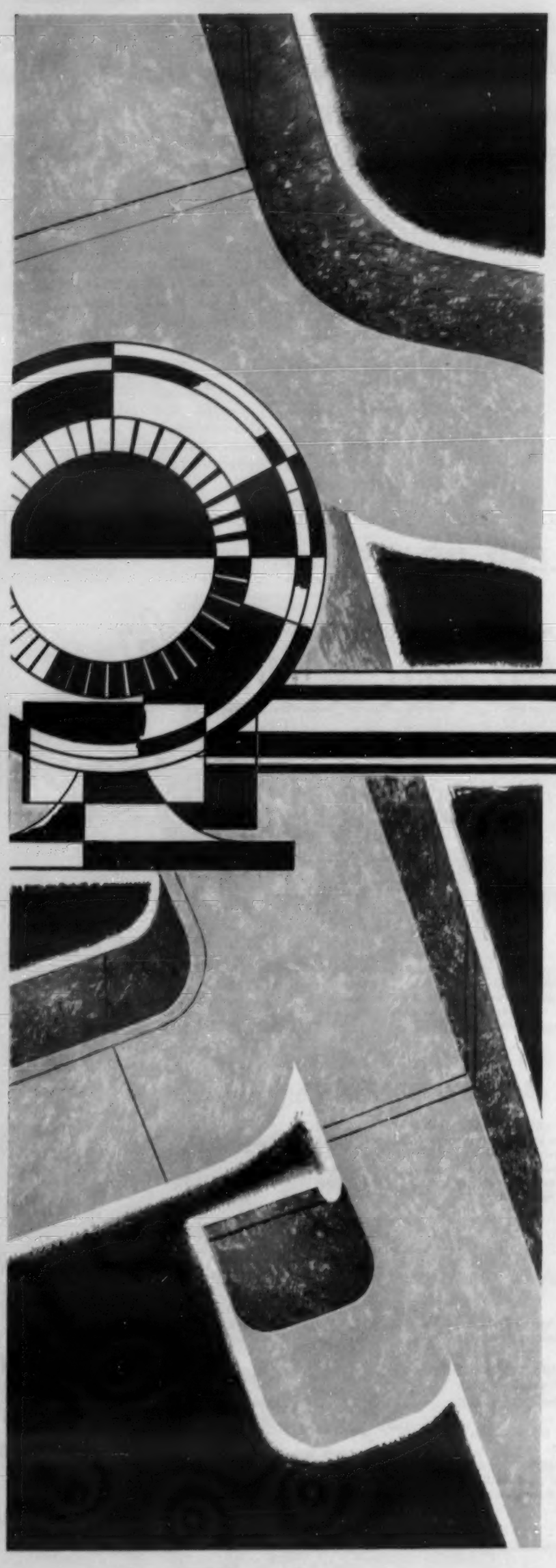
Write today for Refrigeration Kit No. 20
It's packed full of helpful information. Contains:

1) Refrigeration and Air Conditioning Data Book with big, 5-color refrigeration cycle chart
2) Complete Catalog R-155
3) Individual Product Data and Specification Sheets

197

STREAMLINE PRODUCTS

MUELLER BRASS CO. PORT HURON 9, MICHIGAN



Beginning with the February 4 issue—

Once-a-Month

Special Heating Section

to be regular feature of the NEWS

Air conditioning and refrigeration people are doing more and more heating work. Heating people are getting into air conditioning. And the term, as well as function, of "air conditioning" is coming into its own as treatment of air "so as to control its temperature, humidity, cleanliness, and distribution—."

So by popular demand, AIR CONDITIONING & REFRIGERATION NEWS will provide readers more and more news and information on *all* phases of the business.

The new Heating Section, to appear in the first issue of every month starting February 4, 1957, will serve to concentrate and dramatize news and feature articles on all aspects of heating. Editorially, NEWS readers will be provided a comprehensive view of *what's going on in heating.*

In addition to the once-a-month Special Heating Section, all weekly issues will carry timely news of the field. Hence weekly heating news coverage will continue as an exclusive service of AIR CONDITIONING & REFRIGERATION NEWS.

Heating manufacturers are invited to take advantage of this *new force* in the business. Act now! Plan your advertising for this new Heating Section—get maximum reader interest.

The February 4 issue will provide *double impact*. In addition to kicking off the new Heating Section, it is also the Pre-Show issue for the Heating and Air Conditioning Exposition, Chicago, February 25 through March 1, 1957.

AIR CONDITIONING & REFRIGERATION **NEWS**

The Newspaper of the Industry

The newspaper that carries more advertising by far than any other publication in the field.

450 WEST FORT STREET
DETROIT 26, MICHIGAN

NEW YORK, 521 FIFTH AVE., MURRAY HILL 2-1928-9, ROBERT M. PRICE.

CHICAGO, 134 S. LA SALLE ST., FRANKLIN 2-8093, AL SCHILDHAMMER.

LOS ANGELES, 4710 CRENSHAW BLVD., AXMINSTER 2-9501, JUSTIN HANNON.

DETROIT, 450 WEST FORT ST., WOODWARD 2-0924, J. B. SULLIVAN.

Distributor's Christmas Suggestion: 'Give a Room Unit Gift Certificate'

IN KEEPING with its overall theme of "Give a Room Air Conditioner Gift Certificate," L & P Electric Co., Inc., New York distributor of Fedders room units offers its dealers this Christmas window display installed free of charge.

BROOKLYN — The L & P Electric Co., Inc., New York distributor of Fedders room air conditioners, is running a promotion aimed at selling Fedders to the public as a Christmas gift.

The over-all theme will be "A wonderful Christmas gift idea. Give a Fedders gift certificate. Buy now at low pre-season prices, install later."

To support this program, L & P will offer its dealers a Christmas window display (see photo) installed free of charge. The same 5-ft., die-cut Santa Claus that is used in the window display will be available for the dealers' floors.

L & P ran an 1,800-line advertisement in the Sunday *New York Times*, Nov. 25, announcing the thin and low 1957 Fedders models. The ad also plugged the Christmas gift idea.

Dealers will also be supplied with Christmas gift certificates and window streamers.

"We contemplate installing at least 50 Christmas window displays and putting 250 Santa Clauses on dealers' floors," said Stanley Fried, manager of advertising and sales promotion for L & P.

Folder Reminds Chicago Landlords To Rewire

CHICAGO—With their tenants being constantly reminded to live better electrically, more and more Chicago landlords are facing the fact that rewiring is a must.

Such is the theme of the local Electrical Association's new folder recently mailed to more than 20,000 apartment house owners and managers. The folder reminds owners and managers that over 60 appliances are in common use today. Hundreds of apartment dwellers, however, are limited to the use of only bare necessities because of inadequate wiring, it was stated.

Owners and managers of apartment houses are urged to investigate the Electric Association's step-by-step rewiring plan.

DIES FOR SALE

Complete set of proven dies used in the manufacture of 3 models of Home Freezers.

15 cu. ft. chest
21 cu. ft. chest
17 cu. ft. upright

Will sell all or individual sets. Can be used for high or low production. Priced for immediate sale.

Write BOX A5697, Air Conditioning & Refrigeration News.

To Condition City Bldg.

MARION, S. C.—On a low bid of $5,877, F. T. Zeman Electric Co. has been awarded a contract by the city council for air conditioning and heating equipment to be installed in new city hall.

9-Mo. Room Unit Sales Up 16% In Cleveland

CLEVELAND — Air conditioner sales for the first nine months of this year were about 16% ahead of the same period in 1955, according to a report recently issued by the Electrical League of Cleveland.

Refrigerator sales dropped about 3% in September, remaining even for the nine-month period, it was pointed out. Dehumidifier sales gained 225%.

L.K. Fox Dies at 54; Was NEMA Executive

NEW YORK CITY—Leo King Fox, 54, died in his sleep at his home here recently.

Since 1947, he had been a trade association executive with the National Electrical Manufacturers Association, where he acted as staff secretary for the several Electrical Appliance Sections of the association.

RCA Whirlpool Rental Agent Appoints Outlet

NEW YORK CITY — Harold Reiter Associates, Inc., manufacturers' representative, has been appointed New York and northern New Jersey representative for Raymond Rosen Equipment Corp., Philadelphia, national rental agent for RCA Whirlpool room air conditioners, it was announced here.

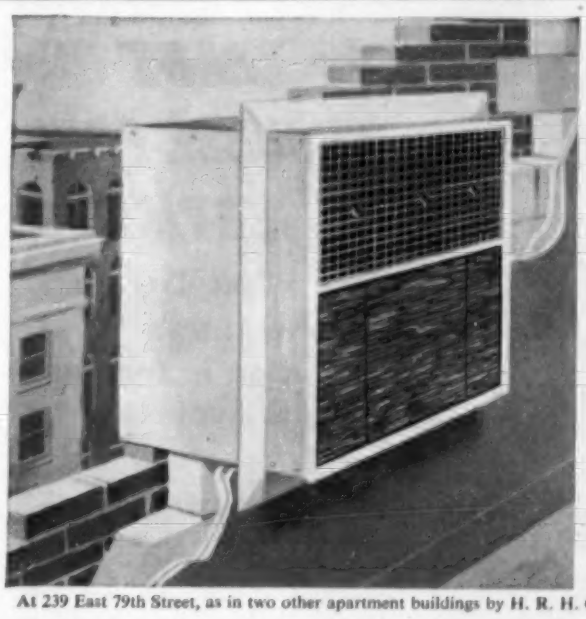
Distributor Named

CHICAGO — Davis Distributors, Honolulu, Hawaii, has been appointed distributor of Norge home appliances for Norge Div., Borg-Warner Corp., Harold P. Bull, vice president of distribution, announced.

Florida Power Area 3-Mo. Cooling Sales Soar to 329% of Quota

MIAMI, Fla.—Air conditioning sales in the area served by Florida Power & Light Co. soared to new heights in the May-through-August "Beat the Heat" campaign with 16,434 units or 329% of quota sold by participating dealers, it was announced.

The campaign topped all previous sales records in home comfort cooling equipment sales. Dade county dealers led the field with 10,401 air conditioning units or 405% of quota sold. Broward county dealers were second with 363% and Brevard-Seminole-Indian River dealers in third spot with 361% of quota, the power company reported.



At 239 East 79th Street, as in two other apartment buildings by H. R. H. Construction Corp., every bedroom and living room will have a new General Electric *Thinline*.

New York contractor installs 1,484 G-E Thinline Room Air Conditioners

(through the wall, flush with outside!)

"The new General Electric *Thinline* was perfect for the installation I wanted—through the wall without overhang. It's compact—takes up only two-thirds as much space, but still has the powerful cooling and exhaust capacities of previous corresponding models.

One of the biggest reasons I chose the *Thinline* is the General Electric name. People have faith in it. So do I. General Electric products are way ahead of the field, soundly engineered and backed by good service."—ALAN P. HOROWITZ, H. R. H. Construction Corp., New York, N. Y.

Advantages of the General Electric *Thinline*:

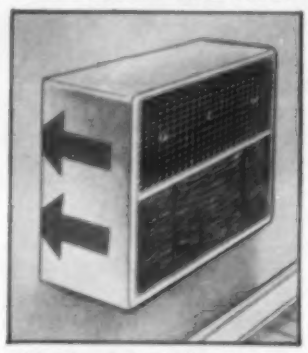
1. It fits almost anywhere—through the wall or in any kind of window. **2.** It's compact—only 16½" from front to back, takes up ⅓ less space. **3.** It's economical—the ½-hp. model uses only 7½ amperes: and area-by-area control means no waste in unused rooms. **4.** It's easy to install—no plumbing, ductwork or expensive wiring needed. **5.** It's available in ½, ¼ and one horsepower units, all in same size cabinet. **6.** It's fully guaranteed in writing by the General Electric Company, Louisville 1, Kentucky.

Progress Is Our Most Important Product

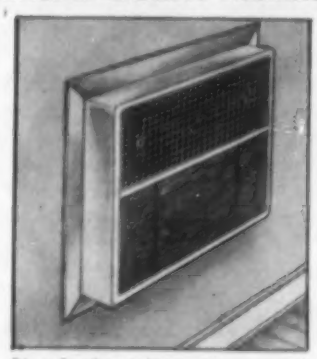
GENERAL ELECTRIC

Look how easy it is to install the new General Electric *Thinline* through the wall:

Build the sleeve and frame into the wall during construction. The opening for the sleeve is about 27" wide by 22" high.



Slide the G-E *Thinline* into the sleeve. Four screws hold it in place, give you a quick and weathertight installation.



Simple but decorative wood trim frame adds a final touch. Notice how little this 16½" unit projects into the room.

Flush on the outside, the G-E *Thinline's* aluminum grille will keep its smart good looks for years.

In First 9 Months

Controls Co. Sales Top $20,000,000

SCHILLER PARK, Ill.—Controls Co. of America recently reported net sales of $20,112,111 and earnings of $719,741 after taxes in the nine months ended Sept. 30, first three quarters of operation since the company was formed by a merger last January.

Combined sales of the two predecessor companies—Soreng Products Corp., Schiller Park, and A-P Controls Corp., Milwaukee—were $18,620,737 and combined earnings were $664,445 in the corresponding nine months last year.

On the basis of 604,316 shares of Controls Co. common stock currently outstanding, the earnings were equal to $1.19 a share as against $1.03 a share. The latter figure is after $43,120 dividend requirements for preferred stock which was retired in May of 1955.

Louis Putze, president, pointed out that the latest nine-month period figures reflected income from the first full quarter of operation of Lake City, Inc., Bellwood, Ill., as a wholly owned subsidiary of Controls Co..

Lake City, acquired last June, makes a synchronous timer motor used in certain of the home laundry, home heating, and air conditioning controls manufactured by Controls Co. of America.

To Cool Photo-Lab

MEMPHIS — A contract for air conditioning a photo-laboratory at the U. S. Naval Air Station has been awarded to Welting Engineering Co. here on a low bid of $4,590.

Hosiery Industry Using Air Conditioning To Protect Against Damaging Temperature, Humidity Changes; Up Worker Morale

LA CROSSE, Wis. — New product developments in the hosiery industry are placing increased importance on the use of air conditioning for process.

With the development of more sheer nylon yarns and the new stretch type hose, air conditioning is being called upon more and more to protect against damaging temperature and humidity variations, according to reports received by The Trane Co., air conditioning and heating manufacturer.

In addition, air control is proving effective in combating a long-time maintenance problem centered around the intricate, precision-type knitting machines used in the industry, it was stated.

"These machines, built to close tolerances and finely intermeshed with thousands of moving parts, have experienced costly expansion and contraction due to temperature changes," Trane said. "As a result, yarn quality has frequently been impaired.

"Temperature fluctuations have resulted in lack of uniformity in stocking lengths while humidity shifts caused 'drag' resulting in too much tension or causing the yarn to run loosely. In either case, quality was lowered.

"To remedy this situation, more and more hosiery manufacturers are turning to air conditioning to achieve ideal, constant production conditions. This ideal condition seems to be 82° F. temperature and 50% relative humidity.

"Does this arrangement do the job? 'Yes' say the folks at the Wisteria Hosiery Mills in Gastonia, N. C.

"They installed a 100-ton capacity Trane chilled water system designed to hold temperature at 82° F. and 50% humidity. The system automatically washes and humidifies the air, heats or cools it, and is doing a good job."

In addition, reports indicate that employe efficiency has improved along with employe morale.

19-Story Building To Be Cooled with 424 Room Units

HARRISON, N. J. — Worthington Corp. was recently awarded the order for equipment to air condition the 19-story office building now being erected on Madison Ave., corner of 59th St.

The system will utilize 424 new Worthington floor-mounted fan and coil type room air conditioners supplied with hot and chilled water from a basement installed Worthington steam turbine driven 550-ton centrifugal compressor.

Circulating chilled water at the rate of 1,320 g.p.m. from 55° F. to 45° F. throughout the building, the system utilizes 1,665 g.p.m. of 85° F. condensing water.

The new building will provide 120,000 sq. ft. of rentable area above the second floor and approximately 8,000 sq. ft. on each of the lower floors, diminishing to about 3,500 sq. ft. at the top.

Builder-owner is Joseph P. Blitz, Inc.; architect, Emery Roth & Sons; mechanical engineer, Rutherford L. Stinard, all of New York; and mechanical contractor, Jarcho Brothers, Inc., Long Island, N. Y.

Gustin-Bacon Names Dravo Div. Regional Distributor

PITTSBURGH — Dravo Corp. announced that its Keystone Div. has been named regional distributor for fiber glass insulation products of Gustin-Bacon Mfg. Co., Kansas City, Mo.

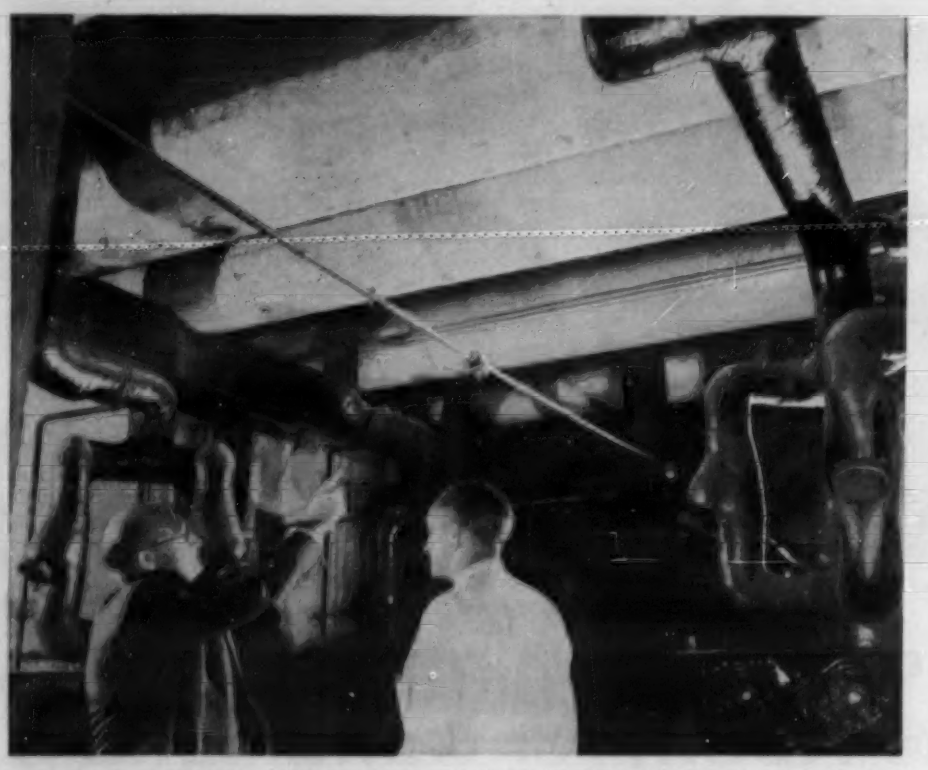
Gustin-Bacon manufactures industrial insulation for piping, building ventilating, heating and air conditioning ducts, and many other uses.

Dravo's distribution area will include 28 counties in western Pennsylvania, nine in West Virginia, four in Ohio, and two in Maryland.

College-Industry Conference To Be Held by UC Jan. 30-31

LOS ANGELES—For the first time on the west coast, the 9th annual college-industry conference of the American Society for Engineering Education will be held at the University of California here Jan. 30-31.

Copies of the program may be obtained from University of California Extension, Engineering, Los Angeles 24, which is to host the conference together with UCLA College of Engineering.

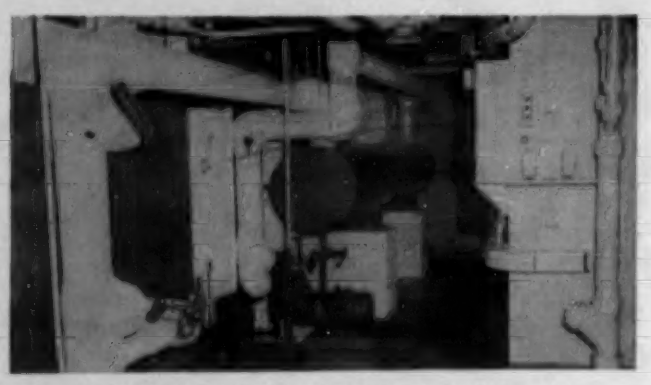


"They've never given us a bit of trouble," states Mr. R. E. Noll (left), Store Superintendent. With him is Mr. J. L. Quisenberry, Head of Maintenance for Wolf & Dessauer, who was with the store when the eight Dry-Ex units were installed in 1937. The system, including eight 50 hp condensing units and 15 remote air handling units, air conditions the main building's seven floors. The system was installed by Hipskind Heating and Plumbing Company of Ft. Wayne.

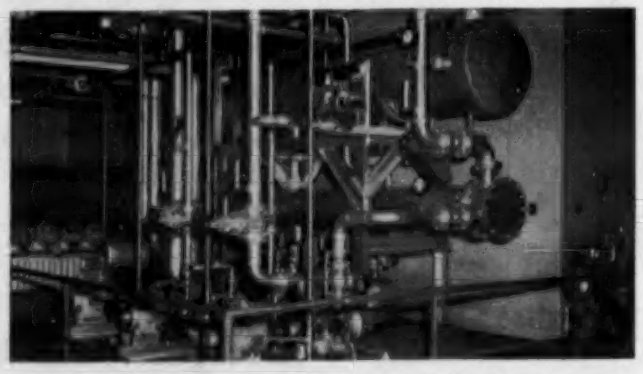
19 YEARS OF TROUBLE-FREE SERVICE

First *Acme* Dry-Ex® Chillers still in operation in famous Indiana department store

Operating with full capacity and efficiency since 1937, eight Acme Dry-Ex Chillers in the Wolf & Dessauer department store, Ft. Wayne, Indiana have never required any maintenance other than routine cleaning. As a result, in almost 20 years of operation, this busy store has never lost a day's air conditioning through interruption of service by these Acme units.



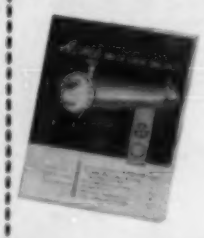
MODERN DRY-EX CHILLERS do all kinds of air conditioning, refrigeration and industrial, direct-cooling jobs. This Dry-Ex air conditions the Anderson Loan Association building at Anderson, Ind. The 50-ton system also utilizes an Acme evaporative condenser.



100-TON DRY-EX AND ACME FREON CONDENSER are major components of this Cincinnati, Ohio air conditioning installation in Western & Southern Life Insurance Company's modern office building. Two Acme Flow-Mizer® cooling towers allow constant re-use of condenser water.

The modern Dry-Ex combines the dependability of Acme's thru-tube construction, proven in 19 years of broad field experience, with the added efficiency of an exclusive star-insert tubing. You receive more chilling capacity per dollar of investment than ever before.

Acme custom builds Dry-Ex Chillers, utilizing standardized parts, to meet exactly the conditions of virtually any water chilling or other liquid cooling application. Capacities from 5 to 400 tons are available in single or multi-circuit units. Two model series, one with star-insert tubing and the other with plain tubing, are available. A wide range of baffle and head pass combinations make it possible to achieve ideal, controlled liquid velocities.



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Weight Saving Experiment

Dairy Uses Aluminum Holdover Plates To Refrigerate Truck

PITTSBURGH — A refrigerated truck, chilled by aluminum cold plates, is being operated by the Isaly Dairy Co. here. The plates were supplied by the Aluminum Co. of America on an experimental basis.

The installation required five aluminum plates for two truck compartments. Three small plates in the smaller forward section for ice cream maintain ambient temperatures of 0° to -10° F. Two larger plates are bolted in the more spacious rear area to keep milk, eggs, and butter at 40° F.

The Isaly people found they could save approximately ⅓ ton in the unsprung weight in the 7-ton truck by using aluminum holdover plates instead of steel, Alcoa declared.

Ammonia is the refrigerant.

Truck Trailer-Type Refrigerated Boxes Hold 144,000 Lbs. of Frozen Food on Ship Decks

SAN FRANCISCO — When Matson Lines freighter schedules were revised recently, one of the objectives was to give Hilo, on the big island of Hawaii, direct service out of San Francisco.

However, the *Hawaiian Fisherman* and the *Hawaiian Educator,* assigned to the Hilo run, had no refrigerated cargo space.

Each has now been equipped with four truck trailer-type reefer boxes especially designed by Freuhauf Trailer Co. as semi-permanent installations — two 30-ft. long units forward and two 24-ft. ones aft. Total frozen food capacity is approximately 144,000 pounds.

Each stainless steel box is cooled by the usual truck refrigeration unit, but the gasoline engine used to drive the "Thermo Kings" on the highway has been replaced by a 5-hp. electrical motor. A special generator set has been installed on deck to furnish power.

Steel cleats have been welded to the ship's deck to hold the reefer boxes in place, with a flange lapping over the lip of an I-beam attached to the base of the unit.

Removal of the cleats allows moving of the box.

Robertshaw-Fulton Names Hansen National Service Director

GREENSBURG, Pa. — A. C. (Arnie) Hansen has been named national service director of Robertshaw-Fulton Controls Co. here, it was recently announced by Charles M. Stainton, vice president and director of sales.

The newly formed national service organization will provide local field service throughout the U. S. to appliance manufacturers using the company's products, the company explained.

Hansen will continue in his present capacity of head of inspection and quality control of the firm's Grayson Controls Div., located in Long Beach, Calif.

He will retain office space there. This was his previous headquarters.

M-H Appoints Olson Market Planning Mgr.

MINNEAPOLIS — Appointment of Edwin B. Olson as manager of Minneapolis-Honeywell Regulator Co.'s market planning was announced recently by H. D. Bissell, vice president.

Olson will be in charge of the firm's sales planning, manpower planning, market analysis, and economic forecasting activities.

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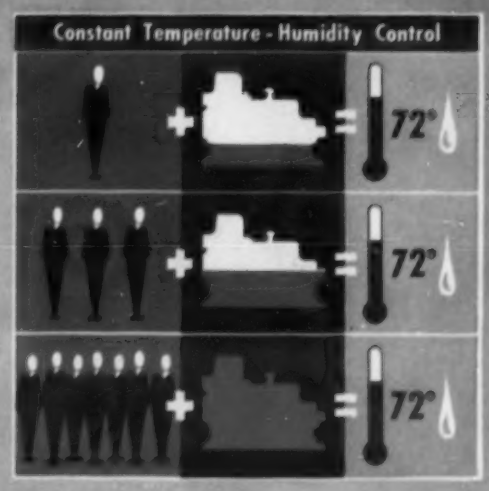

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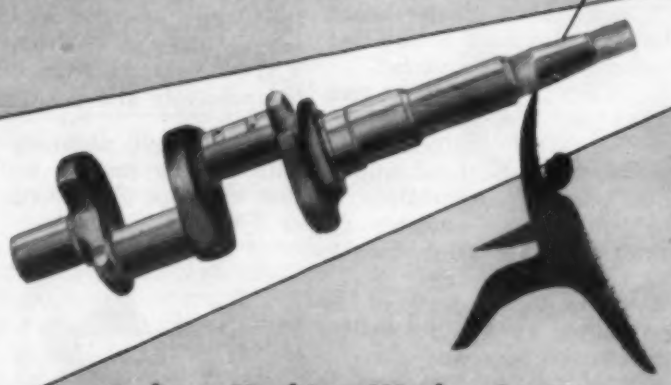

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Electrical Characteristics of Packaged Air Conditioning Units (1)

Problems Imposed on Electric Power; Nature and Operating Cycles of Units

By P. W. Wyckoff, Chief Engineer, Airtemp Div., Chrysler Corp., Dayton

The discussion by P. W. Wyckoff which is being published in this and the following issue of the NEWS, was presented before a meeting of the Transmission and Distribution Committee of the Edison Electric Institute.

The discussion is much more than an outline of the "electrical side" of air conditioning units in its relationship to electric power facilities. Rather it is the most comprehensive—and thoroughly up-to-date discussion of the electrical characteristics of unitary air conditioners that has come to our attention. It has much that should be of prime interest to manufacturers and contractors.

This first part is a review of the problems that air conditioners impose on electric power distribution systems, and of the nature and operating cycles of packaged air conditioners, and the conditions applied for some basic electrical ratings.

Part 2 will offer the results of studies on air conditioner starting and running current, with performance curves, a discussion for step starters, and recommendations for both manufacturers and utility companies.

The widespread availability of electrical power represents one of the greatest accomplishments of the American economy in the last century.

The new air conditioning industry, in turn, presents unusual opportunities for additional utility revenue. It will increase the importance of the utility services to the American home as have few previous industries.

In 1956, the United States average annual consumption of residential electricity will be about 3,000 kwh. In Dayton, Ohio 3,000 kwh. would be used for air conditioning alone in a typical 1,500-ft. ft. residence. The air conditioner would run about 700 hours. In Dallas, Texas, the figures are 8,500 kwh. and 2,000 hours.

The revenue from a single residential air conditioner in an average house will be more than the entire previous power bill. At the same time, the customer obtains an outstanding value in improvement of his standard of living—true year-round comfort at a nominal cost.

FIG. 1—illustrates importance of the electrical industry to air conditioning. Components shown are taken from typical year-round residential air conditioning system. They represent about one-third the installed cost of the complete system.

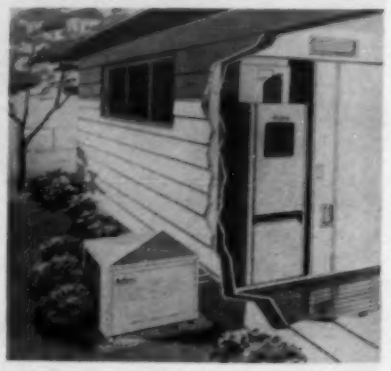

FIG. 2—Gas-fired furnace and blower. Air returning from house space enters the bottom of the furnace through ducts cast in the slab.

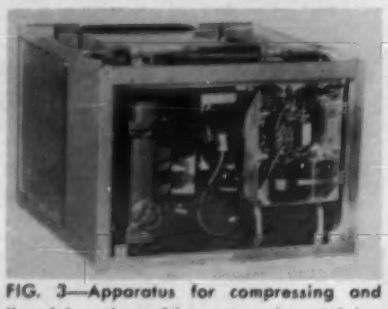

FIG. 3—Apparatus for compressing and liquefying the refrigerant and containing the electric control panel is located outdoors. Condensing unit is connected to the cooling coil over the furnace by two refrigerant lines.

FIG. 4—Attic installation of a newly-designed air-cooled unit which is completely packaged and no field-installed refrigerant lines are involved.

AIR CONDITIONERS AND UTILITY DISTRIBUTION PROBLEM

Although the recent rate of growth of the Gross National Product has been about 3% per year, many utilities are adding load to their systems at increases of 10% and more per year with prospects of faster—rather than slower—rates of increase in the future. New generating and distributing facilities are purchased at increasingly higher costs, but the average cost for residential electricity is now little more than half what it was 20 years ago.

The profitable operation of a utility depends heavily on prudent use of its power distribution complex. The cost of supplying power is primarily determined by the cost of maintaining a huge fixed investment. With a $10,000,000 total investment, an average manufacturing organization could reasonably expect $17,000,000 to $20,000,000 in annual sales and a retailing business, $50,000,000. But a utility could expect no more than $2,500,000 to $3,000,000 in yearly revenue.

Of the money invested in an entire utility system, probably half is in the distribution system. The critical appraisal utilities are making of the effect of residential and commercial central-type air conditioners on their distribution systems is not merely a matter of suspicion regarding a new device. The appraisal is forced on them by the very nature of the utility business.

Most manufacturers in the air conditioning business understand the concern of utility engineers regarding the following facts:

1. While the per cent saturation of the home air conditioning market is around 4%, the industry is aiming for 20% to 25% not many years hence. What will this mean to the electrical distribution system?
2. Unfortunately, many residential air conditioners have been installed without the knowledge of the local utility. When customer complaints of poor voltage, etc. suddenly appear, the utility is in trouble with no prior warning.
3. Some poorly designed air conditioners have unnecessarily high starting current.
4. The best service on air conditioners has not always been available. On occasion, some of this service has actually

(Continued on next page)

No. 8 in a series on refrigeration

DIAGRAM A.

DIAGRAM A, above, represents something that from a mechanical standpoint is the golfiredest contraption ever, and it works like a darn. It is known in the trade as an **aardvark.**

It is almost the first animal in the phone book but not quite because the **aani** is ahead of it, the same being an ape—more or less.

The **aardvark** is used in ant eradication. It is five feet long with its tongue **in.** With its tongue extended it is ten feet long from the tip of its tail to the tip of its tongue. The **aardvark** stalks through Africa and when it sees an ant—**flick!**—its tongue darts out and pulls in the ant. Amazing!

How does it do it? Well, the tongue (we think) is wound on a reel (Fig. 1, Dia. A) which reel is held under spring tension. When the **aardvark** has taken aim at the ant a certain very efficient and essential part automatically **snaps** and suddenly there's the ant on the tip of the **aardvark's** tongue.

The name of that efficient and essential part is on the tip of **our** tongue but its name escapes us at the moment. However, it corresponds to what, in refrigeration circles, is known as **VAPOT.**

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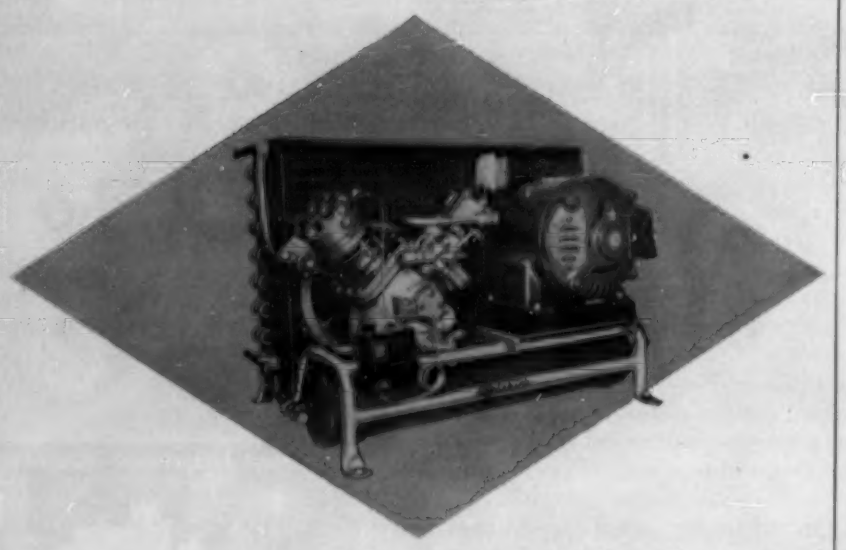

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FIG. 5—Packaged air conditioner commonly found in commercial establishments is illustrated here.

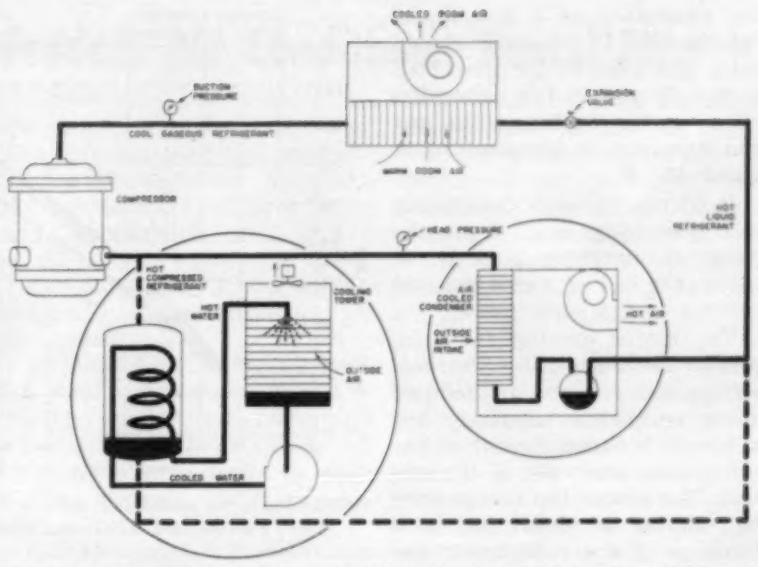

FIG. 6—Line diagram of typical air conditioning system is shown here. Refrigerant returns as a cool gas (45° F.) from the cooling coil and enters the compressor.

Packaged Units--

(Continued from preceding page)

been forced on the utility by default.

5. Air conditioning has a relatively poor load factor and almost no diversity. (Yet this is connected with the nature of air conditioning which is a seasonal business like many other very important business operations. Probably little can be done to help this).

6. The utility cannot afford to ignore a light flicker complaint from even a single irate customer. To overcome individual complaints of flicker has on occasion cost a utility $800 to $900 in new transformer and secondary equipment.

7. The addition of a central home air conditioner to an average small house can double the connected electrical load of that house.

These facts are important to engineers of the air conditioning industry as they are to the utility engineers. By good product design much can be done to help reduce the severity of electrical disturbance imposed by air conditioning. However, radical reductions in starting current are definitely not practical.

It is the purpose of this paper to describe the electrical characteristics of residential and commercial single and three-phase air conditioners having cooling capacities above 15,000 B.t.u./hr. (or, 1.25 "tons" of cooling). The reasons for these characteristics will be given.

In particular, starting and running current values typical of the industry will be shown. Some definite recommendations regarding product design and utility rules follow.

AIR CONDITIONERS—DESCRIPTION AND OPERATION

Fig. 1 illustrates the importance of the entire electrical industry to the air conditioning business. The electrical components shown are taken from a typical year-round residential air conditioning system. They represent about one-third the installed cost of the complete system.

A typical year-round residential air conditioning system consists of four main components. Fig. 2 shows a gas-fired furnace and blower. Air returning from the house space enters the bottom of the furnace through ducts cast in the slab. The furnace blower moves the air upward past the furnace heat exchanger. Then it moves past the cooling coil and into the distributing ductwork. After cooling or heating the space, the air returns, to complete the cycle.

The apparatus for compressing and liquefying the refrigerant and containing the electric control panel is located outdoors. (See also Fig. 3). This condensing unit is connected to the cooling coil over the furnace by two refrigerant lines.

The final component is the year-round thermostat which automatically operates the furnace or air conditioner to maintain the inside temperature.

Note that there are three motors involved: The furnace blower motor—typically a ⅓ hp., the outside condenser blower motor—⅓ hp., and the compressor motor—roughly equivalent in starting current to a 3-hp. size.

The above combination is known as a split-type air-cooled air conditioner. It is called air cooled because the heat absorbed by the refrigerant from the cooled space is rejected to the outside air through a finned coil. Installed cost to the customer for the air conditioner (added to the heating system) runs as low as $1,400.

Fig. 4 shows the attic installation of a newly designed air-cooled unit which is completely packaged and no field-installed refrigerant lines are involved. This type unit is entirely separate from the heating system and uses ceiling diffusers and its own ducts. It is ideally suited to a small house with an unusuable attic with a gable end. Installed cost complete is as low as $900.

The older type air conditioners used in homes rejected the waste heat to a city water line. Because of water supply and maintenance problems, this type has been almost entirely supplanted by air-cooled units. Because of the popularity of these units in residential areas, it is not unusual for a manufacturer to have 70% of his air-cooled production in single-phase units.

For the purposes of simplifying this discussion, single-phase units will be regarded as air cooled. However, they are be-

(Continued on next page)

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FIG. 7—Shown here is the reason for requiring air conditioners to run under ARI high load condition. This TV relay station in Arizona is frequently subject to very high temperatures, yet the equipment must be protected without possibility of tripping out.

Electricial Characteristics--

(Continued from preceding page)

coming more popular in commercial uses and in a short time may be outselling water-cooled units in sizes up to 10 tons and even higher.

The packaged type air conditioners commonly found in commercial establishments are illustrated in Fig. 5. These units are called water cooled because they reject the waste heat to a water line. Because they are used primarily in commercial installations, it would not be unusual to find 90% of this type three phase. For the purposes of this discussion, the water-cooled units will be regarded as three phase.

A line diagram of a typical air conditioning system is shown in Fig. 6. The refrigerant returns as a cool gas (45° F.) from the cooling coil. It enters the compressor which compresses it to a hot gas under higher pressure (normally around 200° F. and 280 lbs. for air-cooled units and 170° F. and 200 lbs. for water-cooled units if the refrigerant is "F-22").

The hot gas now contains both the heat removed from the space being cooled and the heat of compression. In a water-cooled unit (Fig. 5) this heat is removed by a circulating water coil mounted in the condenser shell. (The left circle in Fig. 6).

The water used may be taken from a city water main or, to conserve water, it may be reused by circulating it through an outside cooling tower where it is sprayed past moving outside air which removes the heat by evaporating part of the water.

In the air-cooled units, the heat of the compressor discharge gas is removed by circulating the gas through the tubes of the outside air-cooled condenser. (See the right circle in Fig. 6).

Outside air is blown over the surface of the fins attached to the tubes and removes the heat. Naturally, the hotter the outside air, the hotter the gas must be to get the same amount of heat out. The compressor discharge pressure therefore rises.

The refrigerant emerges from the condenser as a hot liquid (about 105° F. for water-cooled units and 130° F. for air-cooled units). It passes the expansion valve partly flashing into gas and dropping in temperature to about 45° F.

It travels through the cooling coil absorbing heat from the room air blowing past it. It leaves the coil as a cool gas and returns to the compressor.

The motor driving the compressor is washed by the cool refrigerant gas and its temperature is always relatively low unless it becomes locked or the refrigerant leaks out of the system. The power the motor must be capable of delivering is a function of the compressor displacement (or it is related to the cooling capacity of the complete system) and the pressures at the inlet and discharge of the compressor.

The higher the displacement, the more dense the inlet gas, and the higher the discharge pressure—the higher the horsepower required. It is important to standardize on certain inside and outside air conditions in order to compare one unit with another.

STANDARDIZED RATING AND PERFORMANCE CONDITIONS

The ASRE (American Society of Refrigerating Engineers) is a professional engineering organization. Its standards specify testing techniques and the method of measuring cooling capacity. The latest standard is 16-56 and the temperature conditions which have been established for the purposes of *rating cooling capacity* are as follows:

Inside Air Conditions: 80° F. and 50% relative humidity:

Outside Air Conditions: 95° F. and 40% relative humidity.

ARI Maximum Load Current: The Air-Conditioning & Refrigeration Institute is a trade association like the Edison Electrical Institute and its is composed of most of the manufacturing companies in the air conditioning business. The standards put out by ARI, such as 610-56 for residential air conditioners and 110-56 for room air conditioners, specify minimum standards of performance.

For measuring capacity they refer to the ASRE standard and in addition specify the tolerances of production units as regards published capacities. They also cover such items as disposal of condensate water, protection from sweating, etc.

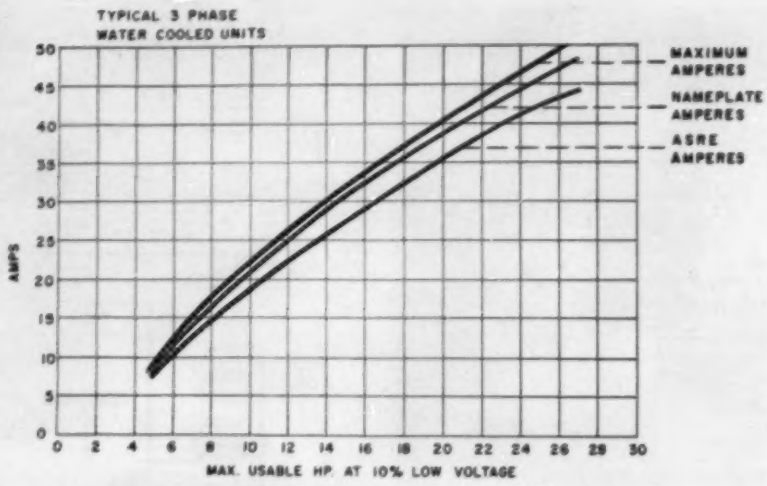

FIG. 8—Shows the relationship between ASRE capacity rating currents, ARI high load currents, and nameplate currents for a single manufacturer.

One of the most important provisions of the ARI standard is the *maximum load condition* under which the unit must run. For an air-cooled air conditioner these conditions are:

Inside air conditions: 95° F. and 40% relative humidity.

Outside air conditions: 115° F. and 23% relative humidity.

Voltage: 10% below rated voltage.

Fig. 7 illustrates the reason for requiring that the air conditioners run under the ARI high load condition. This TV relay station located in Arizona is frequently subject to temperatures up to 115°, yet the expensive equipment in the relay station must be protected without any possibility of tripping out.

NAMEPLATE CURRENT

The *nameplate current* which appears on residential and commercial air conditioners is not determined at either of these conditions. It is rather the result of certain regulations set up by the National Electric Code and Underwriters' Laboratories.

In order to nameplate a unit, the manufacturer must first select the compressor overload. Naturally, he does this so that the unit will at least run under the high load condition. Once the current rating of the overload has been selected and checked by Underwriters' Laboratories, the nameplate current it determined from this value.

The ratio of overload trip current to nameplate current may be as high as 140% or as low as 115% for current type overloads. This range is due to confusion now existing in interpretation of present regulations and the industry is now attempting to straighten this out.

Some manufacturers have "inherent" type overloads attached to the compressor which are sensitive both to current and temperature. There is really no regulation governing these units and nameplate current can almost be chosen at will.

There is a strong tendency to make the nameplate current as low as legally permissible in order to avoid oversizing wires and disconnect switches which are specified by the National Electric Code.

Only advantage this entire system of nameplate current selection presents is that it is determined by agencies other than the manufacturer himself. But it definitely conceals the real technical facts and is no doubt due for some radical revisions.

Fig. 8 shows the relationship between ASRE capacity rating currents, ARI high load currents and nameplate currents for a single manufacturer. This is not, however, necessarily typical of the entire industry. The current values shown are for the compressor only. We have not included the other motors in the system since the compressor is the main source of electrical load.

(To Be Continued)

(To Be Reprinted)

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Paul Reed is on an extended vacation trip, getting a well-deserved rest from his many activities in the air conditioning and refrigeration field.

During this vacation period, his "Refrigeration Problems and Their Solution" column will appear at irregular intervals in Air Conditioning & Refrigeration News.

ASRE Meeting--

(Concluded from Page 1)

ceived charters at the meeting included Wichita, Kan.; Birmingham, Ala.; San Antonio; central Pennsylvania; and the Hudson-Mohawk section.

The Council took action to encourage further activity by the ASRE committee charged with studying more cooperative activity with the ASHAE.

The "Field Installation Practices and Problems" conference evoked some of the liveliest discussion to be heard at ASRE meetings in recent years, and those attending voted unanimously for a continuance of such conferences at future meetings (see other story this issue).

Not only improved insulation, but new possibilities for structural materials for air conditioning and refrigeration equipment were described by speakers at the conference on "New Developments in Thermal Insulation for Household Refrigerators and Freezers."

The advantages claimed for the use of in-the-wall air conditioners in apartment houses and other multi-room dwellings, plus a thorough discussion of techniques in installing these units, featured the conference on "In-the-Wall Units vs. Central Systems for Apartments."

Papers at the technical sessions included some that discussed some new products or methods that can be of assistance in the manufacture and application of the industry's units.

These included "Applications of the Mercury Jet Switch" by W. R. Davis, Detroit Controls Corp.; "Cooling Tower Evaluation and Rating Chart," by John Engalitcheff, Jr., president, Baltimore Aircoil Co., Inc.; and "How Cycling Rate Affects Humidity Control," by J. E. Janssen and Dr. P. E. McNall, Jr., Minneapolis-Honeywell Co.

The next ASRE gathering will be the annual meeting, June 3-6, at Miami Beach, Fla.

Fedders Air Conditioner Rental Plan--

(Concluded from Page 1)

amount for any one application. The plan applies to all products in the Fedders line, including the residential packaged units and "Transomatic" unit, as well as the window-type room units.

The rental plan is said to offer these advantages to the multiple purchaser:

1. A multiple purchaser does not want to purchase air conditioning units for cash and thereby reduce working capital. He may not even desire to make a down payment (no down payment is required in the plan).

2. The purchaser may not want to buy on a time payment basis, which requires him to execute a conditional sales contract or chattel mortgage, since when recorded, these instruments are matters of public information.

3. The purchaser may not want to borrow from his bank, feeling that his line of credit with the bank should not be diminished for a capital expenditure, but instead should be used for normal expenses.

4. Tax savings are possible, since the monthly rental charges are operating expenses and are fully deductible.

Here is how the plan works out from the standpoint of the distributor or dealer:

All arrangements under the rental plan will be made directly between the distributor and National Equipment Rental, Ltd. Applications will be made on a standard form, and will specify the number of units involved and the total installed or delivered price.

Application will indicate the term of the lease which may be 12, 24, 36 months, or any other term agreed upon. To determine the monthly rental, a charge of 6% per year is added to the total delivered price and then the total amount is divided by the appropriate number of months.

As soon as National Equipment Rental, Ltd. receives the application and approves the credit of the applicant, it will prepare the lease and forward it to the distributor to obtain the notarized signature of the lessee. The distributor or dealer returns the signed lease to the rental firm, together with any immediate payments called for in the lease. The rental firm then places an order for the units involved, and the distributor or dealer makes the installation.

The invoice to the rental firm must show the serial number of the units installed. Before payment is made, a form letter signed by the lessee must be received, stating that the units have been received. In the payment to the distributor or dealer, a 5% without-recourse-fee is deducted.

National Equipment Rental, Ltd. will furnish small metal plates reading "Leased from—National Equipment Rental, Ltd." which must be placed in an inconspicuous place on units.

When the lease expires lessee may exercise any of the following options:

a. Continue to rent indefinitely for a very nominal sum. For example, if the original amount of the lease was $3,000 for a 36-month rental at $98.33 per month, then the continued rental after the lease expired would be $15 per month.

b. Return old units and receive allowance of full market value upon the signing of another lease covering new units.

c. Purchase the units covered by the lease for 10% of the original amount of the lease.

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Kwikwrap is supplied in six widths, each designed to exactly cover a specific tube or pipe size—½ to 1⅝ inches OD. Strips are applied so that the end of one joins to the end of the one before it; they will self-seal when pressed together.

HOW KWIKWRAP TAPE IS PACKAGED

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Width for ⅞ in. OD, Width for 1⅛ in. OD, Width for 1⅜ in. OD, Width for 1⅝ in. OD — Carton of 18 30-in. x ½-in. strips—sufficient for covering 45 lin. ft.

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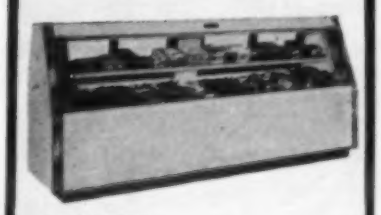

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Service Know-How for Residential Systems

This is the final article in a series by Mr. Lindsley covering some fundamentals in the installation, service, and maintenance of refrigeration and air conditioning systems. Other articles in this series appeared consecutively beginning with the Nov. 5 issue.

The author of the articles has had many years of experience in directing refrigeration service operations, and in instruction on service problems.

By E. D. Lindsley, Manager of Technical Section, Air Conditioning & Refrigeration Service Div., Worthington Corp., Ampere, N. J.

The following is intended as a summary of the most common items of service that the serviceman should give particular attention to, when servicing residential air conditioning units.

Worthington package air conditioning units are charge with the proper amount of refrigerant before leaving the factory, but systems using air-cooled condensing units and air-cooled condensers, must be charged in the field. It is very important that the proper amount of refrigerant be maintained in the system.

UNDERCHARGE OF REFRIGERANT

A loss or undercharge of refrigerant in a system is frequently indicated by continuous running of the unit, and a hissing noise at the expansion valve. The suction and discharge pressure will both tend to be lower than normal when the unit is operating.

In most cases a low refrigerant charge will usually result in a low enough suction pressure to cause the low pressure control to open, shutting down the compressor.

A shortage of refrigerant in a system will cause flash gas to be forced through the liquid line and expansion valve. This will not absorb heat from the coil, so insufficient cooling will be the customer's complaint.

SIGHT-GLASS

A refrigerant undercharge can be easily checked if a liquid line sight-glass is installed in the liquid line.

If bubbles are observed in the flow of refrigerant through the sight-glass, as in Fig. 1, the charge is too low, and more refrigerant should be added. The system should be checked and the leak located and repaired before a full recharge is added.

The sight-glass should be clear, as in Fig. 2, when the system is fully charged.

TESTING FOR LEAKS IN THE SYSTEM

When a system has lost its charge of refrigerant, a thorough check must be made for leaks. This should include all gaskets, valve stems and caps, and all tubing connections.

For this purpose, we recommend a refrigerant leak detecting torch. This type of torch (Fig. 3) will burn with a colorless flame, which will change its color to a light green in the presence of a small amount of "Freon." The hose attached to the detector permits easy access to all parts of the system for testing.

The leak test should be made with a minimum pressure of 75 lbs. on the system, in order to find the smallest leaks. When a water-cooled condenser is used, the water side of the condenser should be checked for leaks before water is turned on at the condenser.

OVERCHARGE OF REFRIGERANT

When an overcharge of refrigerant has been charged into a system, there will not be enough remaining space in the condenser to permit the proper amount of heat extraction from the vapor being pumped to the condenser, by the compressor. This will tend to make the equipment run with a high head pressure and cut off on the high pressure control.

The condenser will be hot over only a small area at the top. A larger than normal part at the bottom of the condenser will be at the liquid line refrigerant temperature. This condition can be corrected by purging off the excess refrigerant charge.

The excess refrigerant should be purged off slowly at the compressor discharge service valve, being careful to note that an excessive amount of refrigerant is not purged out of the system. If this happens, bubbles will appear in the liquid line sight-glass.

Always check the liquid line sight-glass for bubbles, and never add refrigerant unless you are positive that more refrigerant is necessary.

A high liquid level in a water-cooled condenser cuts off the hot gaseous refrigerant from a large portion of the water-cooled tubes, as in Fig. 4.

LOW SUCTION PRESSURE

When a system is operating with a lower suction than is required for cooling, one procedure to follow is to first check the liquid line sight-glass for bubbles. If the glass is clear, then check the filters, duct connection, and fan motor.

Dirty air filters are the most common cause for low suction pressure. They cut down the circulating air flow rate to a point where the refrigeration system is no longer able to maintain itself in balance.

A low suction pressure is also an indication of:

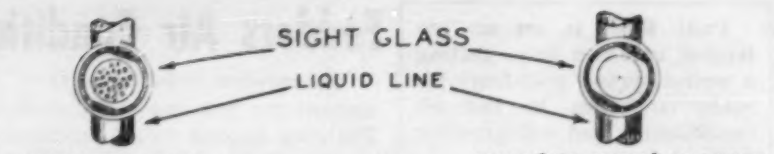

Figure 1 Figure 2

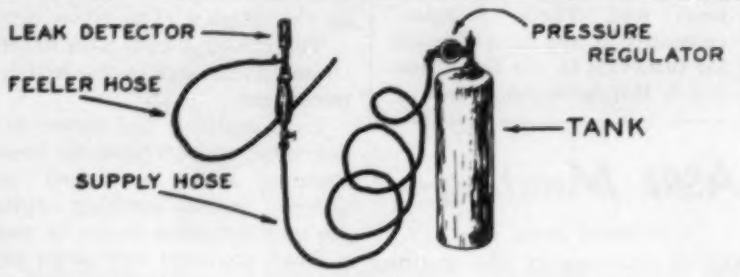

Figure 3

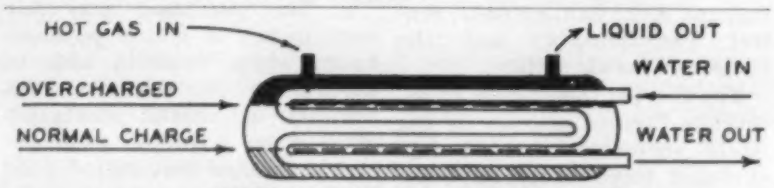

Figure 4

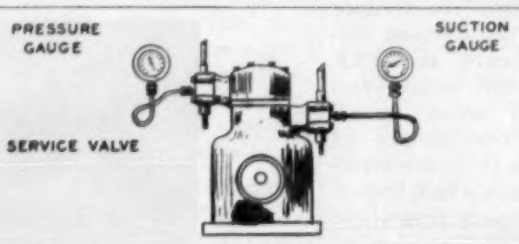

Figure 5

1. A unit short of refrigerant.
2. An improperly functioning expansion valve.
3. A clogged liquid line strainer.
4. Air load (c.f.m.) too low.

HIGH SUCTION PRESSURE

High suction pressure is usually caused by a loose or displaced thermal expansion valve bulb from its proper location. If the bulb is loose, or installed in a warmer than normal location, this will cause it to open wider than normal, allowing an unusually high rate of refrigerant to flow into the evaporator.

Defective compressor valves will also cause a high suction pressure. The compressor can be tested by installing a compound gauge on the compressor suction shut-off valve. By closing the valve stem in, it will cause the compressor to pull a vacuum.

Whenever inspecting a refrigeration system, to accurately diagnose the trouble, gauges should always be installed in the compressor suction and discharge service valves, as in Fig. 5.

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Men on the Move . . .

Carrier Corp.—William J. Gamble was appointed coil department manager for the company's Unitary Equipment Div. He was formerly assistant manager of the systems equipment department.

A-P Controls Div., Controls Co. of America—Stanley A. Johnson has been appointed director of manufacturing. A vice president of the corporation, he has been director of purchasing.

Amana Refrigeration, Inc.—Leonard J. Sahs, who was previously associated with two other air conditioner manufacturers, has been named assistant chief engineer of the air conditioning division. Harlan J. Lortz, who has had 13 years' experience as a research chemist, becomes process engineer in charge of the engineering quality control and processing program. Norman Jenewein, an electrical engineer formerly with Deepfreeze, now a division of Amana, has been named project engineer in refrigeration systems for Amana's new Deepfreeze chest freezers. Donald W. Thomas, also an electrical engineer, has been appointed to the engineering training program. Charles Stevenson, who has been Amana's dealer development manager in the Dallas region, was named southwestern food plan zone manager.

Dyfoam Corp.—John L. D. Bassett was named sales manager of this producer of "Dyfoam" plastic foam insulation. He was formerly a sales engineer at Pittsburgh Corning Corp.

Sturtevant Div., Westinghouse Electric Corp.—In a realignment of the sales organization, Alexander Martin, formerly field sales manager for the Sturtevant general line of air handling equipment, has been named sales manager, power apparatus. Hiram W. Rainey, Jr. succeeds Martin as field sales manager, and will direct sales of all general line equipment for heating, ventilation, and industrial applications. Rainey has worked at the Pittsburgh office, recently as regional manager.

Johnson Service Co.—James W. Taylor, who has been with the Houston branch, was appointed sales engineer in charge of the Memphis branch. He replaces R. L. Elbrecht who is on leave of absence. Robert C. Wang, sales engineer in charge of the Sacramento office, has joined the sales engineering staff of the San Francisco branch.

Milwaukee Valve Co.—Carl E. Rowe has been appointed vice president and general manager and also made a director. He has been assistant general manager of this subsidiary of Controls Co. of America.

Borg-Warner Corp.—Henry M. Haase was elected vice president in charge of engineering and research. He came to Borg-Warner in 1955 as assistant to the president.

Lau Blower Co.—William E. Prather has been appointed vice president of plants and facilities in a realignment of his position with the firm. He was appointed a vice president of production in 1954 and placed in charge of plant planning in 1955. He is now in charge of the company's production facilities in Dayton, Azusa, Calif., and Kitchener, Ont., Can.

Tuttle & Bailey Div., Allied Thermal Corp.—Donald D. O'Neill, for several years manager of the New York office, has been appointed general sales manager. Richard D. Tutt, who has been chief engineer for 10 years, has been appointed director of marketing. Robert S. Rickabaugh continues as sales manager of the Heating Products Div. and will also direct the sales of electrical and electronic devices which are in the process of development. Frank W. Adams moves up from assistant sales manager of the Air Distribution Products Div. to sales manager of this division. William L. Batchelor, assistant chief engineer for six years, has been appointed chief engineer.

Minneapolis-Honeywell Regulator Co.—Carl Swanson was named product manager and Russ Keppel market manager for commercial and industrial burner controls.

Jarrow Products, Inc.—Angelo Monti was appointed head of the engineering staff. He has "an impressive background as a testing and development engineer in industrial product specification and standardizing of power equipment, gasketing and all other types of insulation," it was pointed out.

Norge Div., Borg-Warner Corp.—John P. Kimball has been named director of the Norge Sales Institute, a new department. He will supervise development of Norge home appliance sales and techniques and competitive data for the Norge sales force, distributors, and dealers, and also will direct the Norge field sales training managers. He was formerly associated with Avco Mfg. Corp., most recently as manager of sales training for the Crosley and Bendix home appliance divisions.

Evansville Div., Bendix-Westinghouse Automotive Air Brake Co.—A. G. Wirick was named manager of manufacturing; George W. Phillips, comptroller; W. J. Aulsebrook, manager of quality control; Eugene R. Willemin, industrial relations director; John W. Downen, service manager; Melvin C. Schmidt, service accounts supervisor; W. M. Russell, service returns supervisor. All were formerly with Servel, Inc., except Phillips, who was secretary-treasurer of Mono-Coach Co., Inc., Ironwood, Mich., and Willemin, who was with Bendix Products Co.

Vilter Mfg. Co.—George E. Brenton has been named district manager of the new sales office in Houston, Texas. He will handle Vilter operations in Texas. Prior to joining Vilter, he was with J. H. Lock & Sons, Ltd., Toronto.

Whirlpool-Seeger Corp.—John L. Bricker, Robert L. Evans, and William E. Mahaffay were elected vice presidents and Edward C. Cudmore was appointed controller. Bricker joined the corporation last March as director of marketing. He will continue to direct the marketing of RCA Whirlpool brand products. Evans, who will be in charge of personnel, has been general manager of the Clyde (Ohio) Div. Mahaffay, elected vice president, engineering, joined the company in 1951. In addition to his new position, Cudmore will continue as secretary and assistant treasurer. Also announced were the promotions of James V. Baxter to the new position of director of distribution for RCA Whirlpool home appliances and Richard Powell to general manager of the Clyde Div. Baxter was formerly southwestern regional manager. Powell has been works manager at Clyde. He is succeeded in that post by S. R. Burns, who was previously director of quality control.

Kudner Agency (New York City)—William A. MacDonough, former vice president and director of advertising and sales promotion for the Crosley and Bendix divisions of Avco Mfg. Corp., has joined this agency.

He will service the Frigidaire account.

Philco Corp.—William H. Mullin was appointed to head the Advanced Development Section of Philco's Air Conditioning Div. He has been a member of the Philco organization for the past 12 years, holding various engineering and manufacturing posts, and has twice been the recipient of Philco's Engineering Achievement Award.

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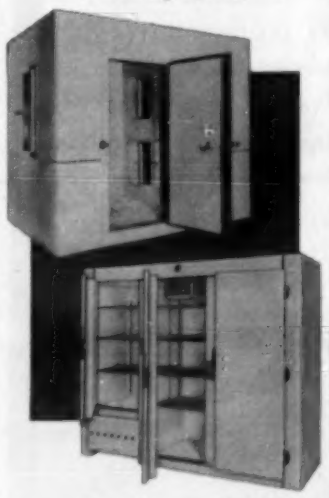

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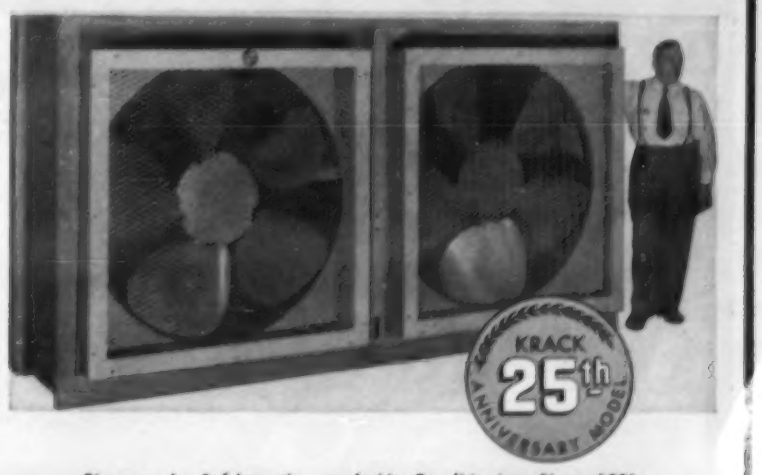

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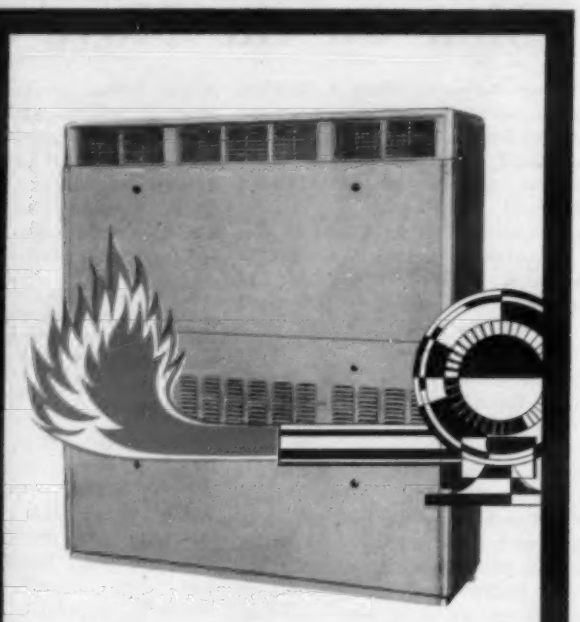

PRE-SHOW ISSUE!

For the first time, AIR CONDITIONING & REFRIGERATION NEWS will devote two separate issues to cover the 13th International Heating & Air Conditioning Exposition to be held in Chicago, February 25 through March 1. The February 4 issue of the NEWS will carry complete pre-show information. So, if you are among the exhibitors, this is your chance to tell your prospects and customers about the products you will display and your location at the show. Take advantage of this big pre-show roundup. Reserve your space now—enough to tell your whole story—to pre-sell your prospects for maximum show results.

SHOW ISSUE!

First day of the exposition the AIR CONDITIONING & REFRIGERATION NEWS Show Issue will be distributed to exposition visitors. For advertisers in the Show Issue it represents a bonus circulation of many thousand. But—equally important—is the added readership, added interest in the exposition roundup issue. Those attending the exposition will consult the advertisements frequently to line up their "things to see" agenda. Those unable to be there will attend the show through the pages of the NEWS. Either way, your advertisement will get maximum attention, maximum readership. Now is the time to reserve your selling space.

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Convention Issue publication date: February 25, 1957

Last forms close: 10 days preceding the date of issue

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1957 RCA Whirlpool Line--

(Concluded from Page 1, Col. 5)

model line of gas ranges which will bear the brand "Estate."

The line was presented to the company's independent distributor organization attending a four-day "Parade of 1957 Appliances." One of the major objectives of a merger 15 months ago that created Whirlpool-Seeger Corp. was reached with the unveiling of the line, the company pointed out.

4 Central Units Offered

A choice of four new 1957 RCA Whirlpool central air conditioners will be available to homeowners in 21 key markets.

"Complete customized installation of the air conditioners, with necessary ductwork and outlet grilles, takes just one day," the company stated. "Speedy installation—to exact engineering specifications — is made possible by prefabricated, pre-insulated permanent metal ducts and grilles, quickly adapted on site to every structural requirement, and by new especially developed installation tools.

"Using the new tools and materials, an outlet grille, for example, is installed in less than two minutes."

To merchandise the central air conditioners, which are available in 2, 3, and 5-hp. sizes, a sales plan has been developed which, the company said, "keeps the dealer in full control of the sale yet relieves him of engineering surveys and installation." The new central air conditioning systems will be distributed by regular RCA Whirlpool appliance distributors.

Service Co. Makes Surveys, Cost Estimates, Installations

"Under this plan," it was explained, "engineering surveys, cost estimates, and installations are made by RCA Service Co. The dealer makes prospect contacts, arranges for engineering surveys, closes sales after receiving survey results and estimates from the service company, and collects the purchase price from the customer."

The 21 markets in which the new central air conditioners will be sold initially are as follows:

New York City; Newark, N. J.; Philadelphia; Pittsburgh; Milwaukee; Chicago; Indianapolis; Cincinnati; Cleveland; Detroit; Kansas City, Mo.; Wichita, Kan.; Baltimore; Atlanta; Tampa, Fla.; Memphis; Dallas; Houston, Texas; San Antonio; Oklahoma City; and Los Angeles.

"Versatile in installation," the central air conditioners "are adaptable to every type of structure and meet all specifications for Federal Housing Administration Title I home improvement loans," it was said.

"Cooling unit and condensing unit in separate cabinets may be close coupled, or condensing unit may be located at a distance from the cooling unit, inside or outside the building as required. A high-capacity 2-hp. self-contained air conditioner, which combines cooling and condensing functions in one cabinet, may be installed in attic, open breezeway or covered car port, or through transom, window, or wall.

"All models are air cooled. For quiet operation, all moving components have rubber mountings. Complete assembly is spring-mounted to deaden vibration. Centrifugal cooling fan, insulated ducts, and outlet grilles are designed to lessen sound.

"Attractively styled, the new air conditioners have durable, corrosion-resistant baked-on enamel finish or neutral green."

Regarding its full line, the company said a gold and white harlequin pattern, used as trim, "is one of the distinguishing family marks of RCA Whirlpool 1957 appliances. Trim, crisp lines of architectural styling, which impart a 'built-in look,' also add an exclusive touch to the family resemblance."

Top-of-the-line "Imperial" models of the dryers, freezers, ranges, refrigerators, and washers are available without extra cost in finishes of white, pink, yellow, or green. The "architecturally-styled" Imperial "Mark XII" refrigerator, freezer, and refrigerator-freezer combination models are also available in the additional color choices of copper and silver satin aluminum.

Designated as Imperial, Supreme, Deluxe, and Custom, according to size and price, the approximately 90 models that comprise the 1957 appliance lines also offer "wide diversification within individual lines."

16 Room Unit Models

For example, the 16 models of room air conditioners, in graduated sizes from ¾ to 2 hp., include a low-amp model as well as other models for such special installations as through a wall or transom, in casement windows, and in double-hung windows.

Twelve freezer models include seven vertical and five chest types with storage capacities of 12 to 20 cu. ft.

SHOWN HERE is the 1957 RCA Whirlpool "Imperial" combination refrigerator-freezer.

ONE of 16 RCA Whirlpool room air conditioners is this 1957 "Imperial" model with electronic filter.

Ten different refrigerators include four refrigerator-freezer models, one with a 15-cu. ft. capacity, two of 13 cu. ft., and one of 12 cu. ft., the latter three with choice of freezer at the top or bottom of the unit. The conventional refrigerators with various individual features range from 12 to 8 cu. ft. in capacity.

Reduced in every dimension, most 1957 room air conditioner models feature a new low, slim silhouette. The units are "slim enough to practically fit between inner and outer walls," according to the company. They are finished in light green with dark green accent and gold trim.

An electronic filter is featured in top-of-the-line Imperial models.

"Flexible air direction control shunts cooled air to any part of the room without creating drafts," it was stated. "Air flow direction is adjustable in a complete circle.

"On most of the new room air conditioners, two fan speeds are provided. The fan may be operated independently of the cooling system for ventilation."

12-Mo. Franchise--

(Concluded from Page 1, Col. 4)

Seeger franchise replaces the previous 30-day cancellation form.

The new franchise, which is in the form of a letter from Bricker to individual distributors, establishes three major conditions, the breach of which by a distributor are the basis for cancellation by the company prior to expiration of the franchise. These are financial instability, refusal to abide by merchandising policies, and inability to maintain appropriate sales volume.

The distributor is accorded a parallel right to terminate at any time prior to expiration upon the breach of two conditions by the company. These are failure to maintain quality standards and non-competitive pricing.

Bricker stated that the new franchise "balances private legal rights with corporate social responsibilities."

RACCA Urges Joint Training--

(Concluded from Page 1, Col. 5)

noted that no over-all program now existed. He expressed the union's willingness to sit down with the contractors and work one out.

Dudley Cawthon, retiring president, said that a contractor-union meeting is scheduled but no definite date has yet been set.

Up To Contractors To 'Train Servicemen'

Discussion during the forum brought out the fact that the apprenticeship training program could only provide general basic training. It would still be up to the contractors to train servicemen themselves.

Efforts of Texas contractors to eliminate bid "chiseling" on contract work through a bid depository, prequalification of contractors, and standardization of bid forms was described by Moody at the management forum.

How California contractors have combatted direct selling by refrigeration equipment manufacturers that leaves the local contractor with only a labor contract was described by C. L. Walling of Los Angeles.

Operation of a profit-sharing program, service rates, overhead costs, and service maintenance contracts were also considered at this forum.

An estimated 150 delegates to the convention also heard results of a membership survey on the average operating and financial status of refrigeration and air conditioning contractors. Details of this survey will be published in a later issue of the NEWS.

An informal survey among members present revealed that overhead among contractors doing from $150,000 to $2,000,000 averaged from 15 to 18.6% of total sales volume.

The contractors also heard a plea by Oliver Ericson, secretary of the Mechanical Contractors Association of Texas, for one big contractor's association on a national level to represent the air conditioning industry.

He suggested some sort of federation between RACCA, the National Association of Plumbing Contractors, and the Mechanical Contractors Association. He indicated that the latter two organizations were sympathetic with such a move.

Newly elected RACCA president William D. Moody, who is also a member of the Houston MCA, declared that RACCA's board of directors desires to work with any other organization for the improvement of the air conditioning contracting industry.

Named to the board of directors for two-year terms were Harvey Hottel of Silver Springs, Md., Joe Marchase of Pittsburgh, Al Dietl of Newark, N. J., Harvey Miller of Chicago, and Jack Wanless of Houston.

Elected one-year directors were Charles Walling of Los Angeles, J. Stewart of Cleveland, and B. A. Holmsten of St. Paul.

Officers, in addition to President Moody, elected for the coming year by the board of directors were: Miller, 1st vice president; Armand Cowan of Miami, 2nd vice president; Lee Quinn of Cincinnati, recording secretary; Hottel, treasurer; and Marchase, sergeant at arms.

RACCA award for the most outstanding pattern of operation for 1956 was given to Hottel for his qualified maintenance and service agreement.

Retiring president Cawthon received a solid gold Benrus "Citation" watch in appreciation of his services during the past year.

Holds First Exhibition

For the first time, RACCA held an exhibition in connection with the convention. The products of 26 manufacturers were displayed in 16 booths.

Cawthon stated that RACCA during the past year increased the membership of existing chapters by 11%, added three new local associations, and accepted 21 direct members for a total of 76 new members.

OPPORTUNITIES

Air Conditioning

Oldest and largest manufacturer absorption air conditioning equipment engaged in program of expansion requires additional personnel.

Immediate Requirements for Field Sales and Service Engineers, Application Engineers, Process Engineers, Service Instructors, Service Supervisors, Service Publications Writers.

Experience with absorption equipment desirable but not essential.

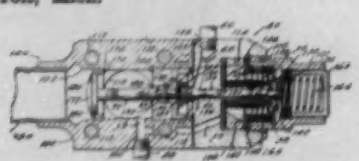
Write BOX A5698
AIR CONDITIONING & REFRIGERATION NEWS

THE Dunkill "MIXOMATIC"
SOFT DRINK DISPENSER
Dispenses mixed carbonated drinks AUTOMATICALLY!
Completely self-contained and available with two to four Mixomatic arms to serve two to four carbonated flavored beverages plus plain carbonated soda.
• Automatically serves carbonated mixed drinks at uniform flow and with exact amount of syrup.
• Dispensing tower has syrup and soda lines internally refrigerated to point of delivery.
• Revolving transparent display merchandiser mounted on top of dispensing tower.
• Two beverage unit delivers 150 drinks per hour.
• Three and four flavor unit produces up to 380 drinks per hour.
• Stainless steel top and front—double baked enamel exterior.
• Eliminates handling of bottles and saves money by producing finished drinks at less than half the cost of bottled drinks.
Write for descriptive literature
THE Dunkill SODA FOUNTAIN CORP.

PATENTS

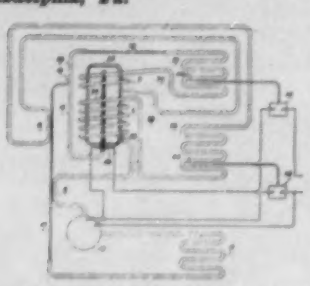
Week of July 10

2,753,692. CONTROL APPARATUS FOR REFRIGERATION SYSTEM. Edward F. Dickieson, Jr., deceased, late of Detroit, Mich., by Nathalie L. Dickieson, administratrix, Detroit, Mich., assignor to Nathalie L. Dickieson, Detroit, Mich.



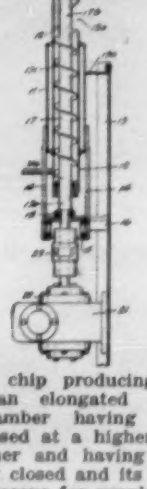
3. In an apparatus of the class described, a casing having a fluid flow passageway therethrough, a valve member controlling fluid flow through said passageway, a pressure sensitive means carried by said casing and having a movable portion operatively arranged to control said valve member, passageway means for transmitting the pressure within said passageway at one side of said valve member to said pressure sensitive means, said apparatus being adapted for association with a fluid compressor and said pressure sensitive means comprising a pair of pressure sensitive elements one of which elements is in continuous open communication with said passageway means independently of the position of the valve member, whereby it is adapted to be sensitive to the inlet pressure of the compressor, and passageway means in continuous open communication with the other of said elements independently of the position of the valve and adapted to be connected to the discharge side of the compressor.

2,753,693. REFRIGERATING APPARATUS. Elmer W. Learfoss, Jr., Philadelphia, Pa.



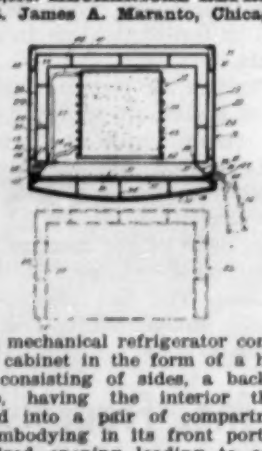
10. In a refrigerating system including a compressor, a condenser, and a capillary tube for delivering liquid refrigerant to a first evaporator, a second evaporator in series flow relationship with said first evaporator, flow control means comprising; an accumulator, a passage-way communicating with said accumulator and the outlet of said capillary, first means adapted to cool said accumulator and to store liquid refrigerant therein and to oppose thereby the flow of liquid refrigerant to said second evaporator, and second means adapted to heat said accumulator and operable to discharge liquid refrigerant therefrom and to effect thereby the flow of liquid to said second evaporator.

2,753,694. ICE DISINTEGRATING AND CHIP DELIVERING SPIRAL ICE CHIP PRODUCING MACHINE. Fay A. Trow and Marcus Nelson, Albert Lea, Minn., assignors to Queen Stove Works, Inc.



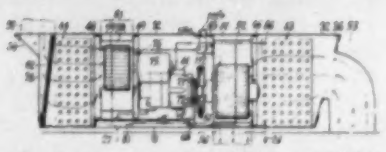
1. An ice chip producing machine comprising an elongated cylindrical freezing chamber having one end thereof disposed at a higher elevation than the other and having its lower end sealingly closed and its upper end being open, means for supplying water to the inside of said freezing chamber, means for cooling the wall of said freezing chamber to freeze ice on the inside surface thereof, an ice conveying auger having its lower end journalled at the bottom of said freezing chamber with means for rotating the same on its longitudinal axis whereby the spiral edge thereof disposed in closely spaced relation to the inside wall of said chamber shears off layers of ice frozen thereon and carries said sheared off ice masses upwardly through the chamber to collect the same into a spiral mass and deliver said spiral mass upwardly out of said chamber, said auger having an upwardly extending shaft portion disposed axially thereof and extending outwardly beyond the upper end of said chamber, and a mass disintegrating and removing member surrounding said shaft and having a beveled ice-engaging surface at the lower end thereof with the lower end of said beveled ice-engaging surface being disposed substantially adjacent the upper end of said auger, and said lower end of said beleved portion being constructed into a narrow splitting element for initially dividing the spiral ice mass into two segments while progressive movement of said mass forces said segments upwardly against the beveled ice engaging surface of said member to break up said ice and discharge the same into a storage chamber.

2,753,695. MECHANICAL REFRIGERATOR. James A. Maranto, Chicago.



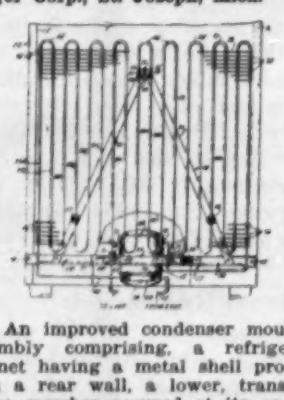
5. A mechanical refrigerator comprising a cabinet in the form of a hollow body consisting of sides, a back and a top, having the interior thereof divided into a pair of compartments, and embodying in its front portion a full sized opening leading to one of the compartments, and a hollow door hinged to one of the sides of the body so that it is capable of swinging into and out of a closed position wherein it closes the opening, and having an opening leading to its interior, a hollow hermetically sealed shell formed wholly independently of the door, disposed normally in the interior of the door, embodying outer and inner walls and a continuous side wall between the margins of the outer and inner walls, adapted to be inserted into and out of place through the second mentioned opening, and having the space within its walls evacuated of air, a motor-compressor - condenser - receiver unit mounted in the other compartment in the body of the cabinet, and an evaporator unit mounted in said one compartment, embodying an evaporator coil, and having the ends of the coil connected respectively to the receiver and the suction side of the compressor.

2,753,696. AIR CONDITIONER FOR PASSENGER AUTOMOBILES. John P. Guerra, Buffalo, Leslie R. Benemelis, Tonawanda, and Leonard J. Sahs, Hamburg, N. Y., assignors to Fedders-Quigan Corp., Buffalo, N. Y.



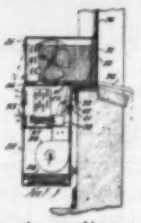
1. A car air conditioning machine comprising a casing adapted to be installed in the trunk space of an automobile, a hydraulic motor and a refrigerant compressor mounted in said casing at about the central portion of said casing, a driving connection between the motor and compressor, a refrigerant condenser mounted in the casing adjacent one end thereof, a refrigerant evaporator mounted in the casing adjacent the other end thereof, bulkhead walls disposed transversely of the casing and substantially isolating the condenser and evaporator from the motor and compressor, air propelling members positioned adjacent each of said transverse walls for circulating air over the condenser and evaporator, said casing being formed with openings adjacent the condenser for drawing air from outside an automobile and returning said air after passage over the condenser to the outside, said casing being formed with other openings for drawing air from inside an automobile over the evaporator and returning said air to the inside, refrigerant connections between the compressor and condenser and evaporator for connecting the same in a closed cyclic path, a hydraulic circuit in the casing extending from a point exteriorly thereof to the hydraulic motor and from the motor to an oil cooler positioned adjacent the condenser air propelling means and from said cooler to a point exteriorly of the casing, and manually controllable means in the hydraulic circuit for substantially bypassing the hydraulic motor to govern the refrigerating effect.

2,753,697. CONDENSER AND COMPRESSOR MOUNTINGS FOR HOUSEHOLD REFRIGERATORS. Ernest A. Bailiif, Evansville, Ind., assignor, by mesne assignments, to Whirlpool-Seeger Corp., St. Joseph, Mich.



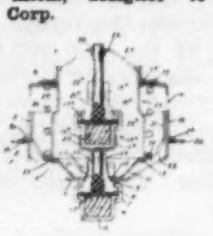
1. An improved condenser mounting assembly comprising, a refrigerator cabinet having a metal shell provided with a rear wall, a lower, transverse frame member secured at its ends to said rear wall adjacent each of the side walls of the refrigerator, an upwardly extending frame having an upper part located centrally of the back of the refrigerator and having lower parts located adjacent the side walls of the refrigerator on the back wall, said frame being carried by said transverse frame member, to which the frame is secured at its lower end, a condenser comprising a multiplicity of passes of tubing arranged in a series and joined by U-shaped bends between each successive pass, heat dissipating means integrally welded to said tubing and comprising a multiplicity of members arranged close to each other and parallel to each other, and welded to the external surface of said tubing from side to side of the rear wall of said cabinet, resilient means comprising a coil spring supporting the weight of said condenser from the top of said frame, the support being applied to the condenser midway between the lateral sides of the condenser assembly and adjacent the top of the condenser, causing the condenser to hang downward, and resilient means comprising a coil spring acting between the condenser and said frame applied to the frame and to the condenser at two points near the bottom of the condenser and close to the lateral edges of the condenser for securing the condenser against a twisting movement and against movement toward and from the back of the cabinet.

2,753,699. ROOM AIR CONDITIONER. Russell R. Gannon, Cincinnati, Ohio.



6. A room air cooling unit comprising an upper section adapted to rest on an interior window sill and abut the window, and a lower section depending within the room from said upper section, said sections containing motor and compressing means, a condenser, an evaporator, a blower and means to discharge accumulated moisture to the out-of-doors, said moisture discharge means comprising a sump to collect water from said evaporator, a pair of contacts in an electric circuit to effect an electric current upon connection by a sufficient quantity of moisture in said sump, a conduit having internal step-like configurations, said conduit extending upwardly from said sump, a drain leading from said conduit to the out-of-doors, and vibrating means attached to said conduit and in the electric circuit including said connections, whereby jiggling of said conduit by said vibrating means causes water to travel up said step-like configurations to said drain pipe.

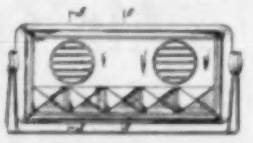
2,754,062. BALANCED THERMOSTATIC VALVE. Adolf Von Wangenheim, Detroit, Mich., assignor to Detroit Controls Corp.



1. In a thermostatic valve, a casing having an end wall with a sleeved outlet opening of reduced diameter therethrough, a supporting means carried transversely by said casing, an annular valve seat member carried by said supporting means, means having a portion radially outward of said valve seat member with a flow inlet opening therethrough, a tubular valve member reciprocally guided in said outlet opening and positioned within said casing and movable longitudinally toward and away from said valve seat member for controlling flow of fluid entering said casing through said flow inlet opening and flowing into said tubular valve member, means for discharging fluid from the interior of said tubular valve member, said casing having in its side wall a normally open outlet port adjacent said end wall for the flow of fluid in bypass relation to said tubular valve member, an annular sleeve member laterally spaced from and surrounding said tubular valve member for flow of liquid between said valve member and said sleeve member, said annular sleeve member being carried by said valve member and cooperable with said outlet port to close the same upon tubular valve member opening movement, and thermostatic means or moving said tubular valve member.

DESIGNS

178,228. PORTABLE AIR CONDITIONER CABINET OR SIMILAR ARTICLE. Eldon F. Essman and Lavern D. Kascel, Dubuque, Iowa, assignors to Eska Co., Dubuque, Iowa.



178,229. PORTABLE AIR CONDITIONER CABINET OR SIMILAR ARTICLE. Eldon F. Essman and Lavern D. Kascel, Dubuque, Iowa, assignors to Eska Co., Dubuque, Iowa.

(Continued on next page)

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications $10.00 per insertion. Limit 50 words. 20¢ per word over 50.

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POSITIONS WANTED

SALES ENGINEER—with five years' successful sales, service and management experience in controls industry. Seeking improvement. Good refrigeration, heating and air conditioning background. Have maintained excellent contacts with OEM, wholesalers and dealer missionary work. Age 30 and family man. Prefer Philadelphia territory. BOX A5694, Air Conditioning & Refrigeration News.

AGGRESSIVE MANUFACTURER'S representative with engineering background and a proven merchandising sales record, covering inside the Middle Atlantic States, desires one additional volume producing line. Reply BOX A5700, Air Conditioning & Refrigeration News.

MANUFACTURER'S REPRESENTATIVE calling on refrigeration and air conditioning wholesalers and manufacturers of refrigeration and air conditioning products in Texas, Oklahoma and western Louisiana, desires additional nonconflicting lines. Now represents a major coil manufacturer and a dehydrator manufacturer. BOX A5701, Air Conditioning & Refrigeration News.

WANTED—POSITION as heating and air conditioning superintendent or service manager. Twenty years' experience, know controls, electrical, sheet metal and allied trades. Have done layout and engineering. Also four years sales with jobber. Free to travel. Prefer east of Mississippi River. Write BOX A5703, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

MANUFACTURERS REPRESENTATIVES: Opportunity for association with a firm manufacturing quality products since 1945. We have territories available for men experienced in selling central plant conditioners, multizone conditioners and coils. Write THERMAL ENGINEERING CORPORATION, P. O. Box 13254, Houston 19, Texas.

SALES REPRESENTATIVE wanted, age no barrier, for sale of new development in the air conditioning field to jobbers. This new product is one of the three major components of the refrigeration cycle and will completely change existing conventional field practice. It is extremely saleable and will reward a hard-hitting individual with above average earnings on a liberal commission basis. Exclusive protected territories. Previous experience in air conditioning, refrigeration, plumbing, or heating industries desirable but not essential. Engineering background helpful. The company offering this product is now the leading manufacturer of one of the three major components of the refrigeration system. Write now, giving us personal details as well as present activity to BOX A5659, Air Conditioning & Refrigeration News.

WANTED—TWO district sales supervisors: one to be located in San Francisco and one in the South to supervise sales offices of manufacturer of heating and air conditioning equipment on West Coast and Southern areas. Send complete information of education, experience and salary requirements to BOX A5681, Air Conditioning & Refrigeration News.

SALES ENGINEER—familiar with refrigeration and heat exchangers to call on refrigeration, air conditioning, and allied companies in Chicago and New York areas. Excellent opportunity with large industrial company; salary and expenses, car furnished. Send complete details to BOX A5702, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

NOW AT your local wholesaler guaranteed 20 foot lift new Kesco King Size 1957 automatic condensate water disposal pumps. 3 inches water in tank starts pump. Designed for air conditioners, ice cube bins, drinking fountains. Wholesalers, for 1957 literature, write to KESCO PRODUCTS CORP., Box 84, Springfield Gardens 13, New York.

BUSINESS OPPORTUNITIES

WANTED: RELIABLE and capable distributors for our air conditioning and refrigerating equipment. Good territories available. Full line of compressors, condensers, coils, coolers, controls, valves and fittings, pressure vessels, etc. Contracts include repairs and spare parts for equipment now in use. Profitable account. Address Department B, FRICK COMPANY, Waynesboro, Pennsylvania. Refrigeration Engineering Pioneers since 1882.

FOR SALE: Old established heating, air conditioning and commercial refrigeration dealer in prosperous west Texas city. Equipment and merchandise $15,000.00. BOX A5691, Air Conditioning & Refrigeration News.

AVAILABLE THROUGH purchase or merger. Established air conditioning and heating wholesaling firm. Annual sales one-half million. Located major city in Southern California. Transfer of franchises contingent upon acceptance by manufacturers based upon trade reputation, financial strength. Principals only. BOX A5693, Air Conditioning & Refrigeration News.

FOR SALE: Commercial refrigeration and air conditioning contracting and service company doing over $300,000.00 per year, nearly one-third service. Long established profitable operation; midwest; major franchises; city less than 200,000. Owners desire to devote time to other interests. BOX A5704, Air Conditioning & Refrigeration News.

MISCELLANEOUS

ATTENTION SERVICEMEN: Send for free circulars and bulletins on refrigeration parts and equipment. Real money saving values: WALTER W. STARR; 2633 Lincoln Avenue, Chicago 13, Illinois.

ENGINEER

ADVANCED DEVELOPMENT

Major Eastern appliance manufacturer has an opening in its advanced Studies Group for a young imaginative Engineer with a good theoretical background in thermodynamics and fluid dynamics. Practical experience in refrigeration, air-conditioning and air filtering desirable. Good opportunity for right person. Submit complete resume including earnings to:

Write BOX A5690, Air Conditioning & Refrigeration News.

BRAND NEW
COMPRESSORS
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Because of discontinuing production of Universal Refrigerators, Freezers, Air Conditioners and Beverage Coolers, we have a large stock of Brand New Compressors and Units which we are closing out at very low prices. List sent on request.

UNIVERSAL DIVISION
THE HORTON COMPANY
915 LIBERTY AVE., PITTSBURGH 22, PA.

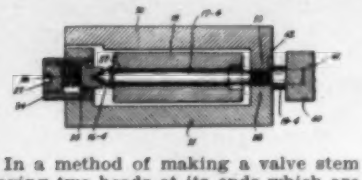
For more information about products advertised on this page use Information Center, page 24.

PATENTS

Week of July 17

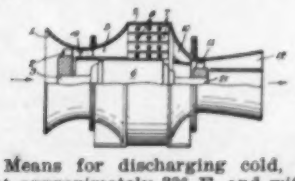
(Continued from preceding page)

2,754,571. METHOD OF MAKING A TWO-HEADED VALVE SYSTEM. Oscar C. Steffens, St. Louis, Mo., assignor to Alco Valve Co., University City, Mo., a corporation of Missouri. Application Dec. 1, 1950, Serial No. 198,623. 1 Claim. (Cl. 29—157.1.)



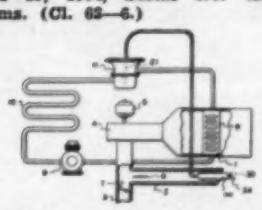
In a method of making a valve stem having two heads at its ends which are subjected to a striking force by a plunger loosely enclosing the valve stem, the improvement of making said heads of increased strength which comprises the steps of taking a metal bar of the diameter of the valve stem but somewhat longer, cold-heading a first head to be used as a valve head on a first end of the bar which is thicker than the bar and in the process shortening said bar, said first head protruding laterally beyond the diameter of the bar, loosely enclosing said bar completely about its periphery in the plunger so that it may be moved toward and away from the first head and be limited in its movement thereby and supporting said bar and plunger as a unit in a die by supporting said first head of the bar in a biased and adjustable positioning support and tightly holding the bar interiorly of its second end in a penetrating press device at a preselected distance from said first head determined by the position of said adjustable support and in such a manner that the plunger rides loosely on said bar, cold-heading a second head onto the protruding second end of the bar and against the press device to provide a head which is thicker than the bar so as to limit the movement of said plunger, and preventing any buckling of the bar by expanding the support for the first head against the biasing means.

2,754,660. APPARATUS FOR REFRIGERATING AIR. Willard L. Morrison, Lake Forest, Ill., assignor to The Union Stock Yard and Transit Co. of Chicago, Chicago, Ill., a corporation of Illinois. Application May 12, 1955, Serial No. 509,263. 4 Claims. (Cl. 62—6.)



1. Means for discharging cold, wet air at approximately 32° F. and with a moisture content of not less than 100% relative humidity including a housing containing an air passage, a blower adapted to compress ambient air and propel it along said passage, a cold element exposed to and adapted to cool the compressed air, a turbine in the path of said compressed air where the air is compelled to do work with resultant cooling, means for supplying power to the compressor, means for controlling the rate of heat extraction from the cooler in consonance with the differential between the wet bulb temperature of the air entering the compressor and the temperature of the cooler.

2,754,661. AIR CONDITIONING APPARATUS. Gerard G. Coyne, Erie, Pa., assignor to General Electric Co., a corporation of New York. Application April 19, 1954, Serial No. 423,943. 8 Claims. (Cl. 62—6.)

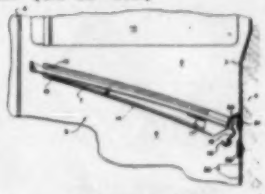


1. Refrigerating apparatus comprising a condensing unit, an evaporator, means including an adjustable expansion valve connecting said condensing unit and said evaporator in a closed refrigerant system, said adjustable expansion valve being operable to vary the restriction offered to refrigerant flow by said valve, means for blowing an air stream over said evaporator, and means responsive to the temperature of said air stream for adjusting said valve to vary the refrigerant flow in said system in accordance with changes in said temperature thereby to modulate the capacity of said system and control the cooling effect applied to said air stream, said valve including a fixed orifice and a valve element having a pair of adjacent frusto-conical sections cooperating with said orifice to vary the restriction of said valve, said sections being sloped at different angles for providing a fine adjustment of the refrigerant flow during the original reduction in the enclosure temperature and a coarse adjustment of the refrigerant flow thereafter for temperature control.

2,754,662. REFRIGERATING APPARATUS WITH MOISTURE CONTROL MEANS. Lawrence A. Philipp, Detroit, Mich., assignor to Nash-Kelvinator Corp., Detroit, Mich., a corporation of Maryland. Application March 24, 1954, Serial No. 418,373. 5 Claims. (Cl. 62—89.)

1. In a closure member for closing an access opening of a refrigerating apparatus cabinet having a cooling element, an outer rectangular casing, an inner rectangular panel closing said casing to form a lid, heat insulation between said casing and inner panel, an outlet for emission of water vapor by diffusion from the relatively warm interior of the lid to the relatively cold cooling element, and pervious duct means extending from corners of the lid to said opening to conduct water vapor thereto.

2,754,663. ADJUSTABLE BAFFLE FOR A REFRIGERATOR. Julius B. Horvay and George C. Harbison, Erie, Pa., assignors to General Electric Co., a corporation of New York. Application Oct. 28, 1953, Serial No. 388,724. 5 Claims. (Cl. 62—103.)

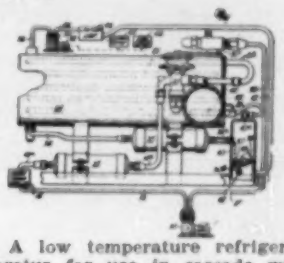


1. In a refrigerator having a food storage compartment including side walls and a rear wall, a support member mounted on each of said side walls, a baffle adapted to be positioned in said support members to divide said compartment into upper and lower portions, an evaporator in said upper portion, each of said support members having a lower support and an upper support, said lower support being at an angle to said upper support, said upper support being of a short length with respect to said lower support, said upper support and one end of said lower support cooperating to support said baffle in one position, the entire length of said lower support serving to support said baffle in a second position, a gasket mounted on said rear wall, said baffle engaging said gasket to substantially prevent circulation of air from the upper portion to the lower portion when disposed in one of the positions, said baffle being spaced from said gasket to permit circulation of air from the upper portion to the lower portion when disposed in the other of the positions.

2,754,664. ICE CREAM FREEZER. Harold F. Oltz, Miami, Fla., assignor to Ar-Tik Systems, Inc., Miami, Fla., a corporation of Indiana. Application March 12, 1954, Serial No. 415,946. 4 Claims. (Cl. 62—114.)

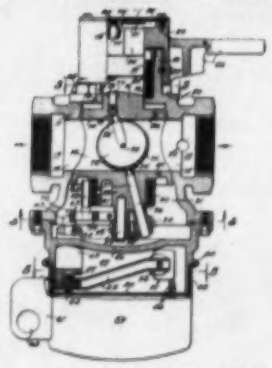
1. A device of the character described for freezing a liquid mix and dispensing it as a frozen product comprising a freezing container having end walls, an inlet for the liquid mix and an outlet for the frozen product, valve means mounted externally of said container on one of its end walls for dispensing the frozen product, said valve means including a downwardly depending discharge nozzle, an insulating shield mounted on said container and enclosing said valve means and at least a portion of the end wall on which said valve means is mounted, means for detachably mounting said shield member on said container, said shield member having its wall substantially spaced from said valve means and provided with an opening through which a portion of said discharge nozzle extends, and said shield member protecting said valve means from the atmosphere and therefore causing a coating of frost to be developed on said valve means and the portion of the end wall of said container which it encloses.

2,754,665. LOW TEMPERATURE REFRIGERATION SYSTEM FOR CASCADE OPERATION. Paul H. Brandt, Park Ridge, Ill., assignor to Murphy & Miller, Inc., Chicago, Ill., a corporation of Illinois. Application Sept. 20, 1952, Serial No. 310,689. 3 Claims. (Cl. 62—117.6.)



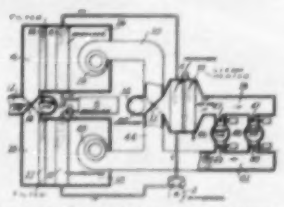
1. A low temperature refrigeration apparatus for use in cascade with a high temperature refrigerating system, the latter having a pump, cooler, and evaporator and in which refrigerant is pumped from the evaporator to the cooler; said low temperature refrigeration apparatus comprising a pump, cooler and evaporator, and operable to pump refrigerant from said last evaporator to said last cooler, said cooler of said low temperature apparatus comprising a compartment, the interior of which is in heat exchange relation with the evaporator of the high temperature system; said last pump being outside said compartment; a reservoir in said low temperature apparatus positioned to receive liquid refrigerant from said low temperature cooler and having an outlet at its lower portion communicating with said low temperature evaporator; a float valve in said reservoir operable to close the outlet when the liquid level in said reservoir falls below a predetermined point, and means defining a path for gas flow from the upper part of said reservoir to said low temperature cooler.

2,754,846. VALVE STRUCTURE. William A. Ray, North Hollywood, Calif., assignor to General Controls Co., Glendale, Calif., a corporation of California. Application June 16, 1952, Serial No. 293,813. 18 Claims. (Cl. 137—614.17.)



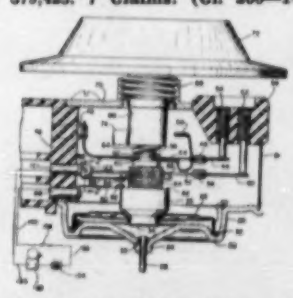
1. In a valve structure: a valve casing having an inlet and an outlet opening; a closure member movable between alternate controlling positions relative to said casing and having a passage therethrough; said inlet and outlet openings each having an end extending to said closure member; said opening-ends and said passage being so arranged that when the closure member is in one of said positions communication is established between said inlet and outlet openings by way of said passage, and when the closure member is in the other of said positions both of said opening-ends are closed by the closure member; supplemental closure means in said closure member passage and movable to open and close said passage; and means operated by movement of said closure member for effecting corresponding movement of said supplemental closure means, the arrangement being such that when the closure member is in said other of its controlling positions the supplemental closure means is in passage-closing position.

2,755,072. AIR CONDITIONING. Joseph W. Kreuttner, North Tarrytown, N. Y. Application July 12, 1954, Serial No. 422,490. 11 Claims. (Cl. 257—3.)



1. In an air conditioning system for a conditioned space having various zones, the combination of, a dual duct air distribution system comprising a warm air duct and a cold air duct which are adapted to make available supplies of warm air and cold air to the various zones of the conditioned space, air flow control means to regulate the flow of air from each duct to each zone, whereby the desired temperature and humidity conditions may be maintained in the various zones of the conditioned space, a refrigeration system having a first condenser which is positioned to heat air moving to said warm air duct and a second condenser which is positioned to dissipate heat to a stream of air, said refrigeration system also including an evaporator which is adapted to cool a stream of air passing to said cold air duct, said refrigeration system also including a compressor and refrigerant lines forming a refrigerant circuit extending from said evaporator to said compressor and from said compressor through said first and second condensers, a first fan causing air to flow through said second condenser, a second fan to cause air to flow through said evaporator, and air flow means including damper means and conduit means to direct a return air stream from the conditioned space either through said evaporator and thence to said cold air duct with a portion of the air entering said warm air duct through said first condenser, or to direct the return air stream through said first and second condensers to said warm air duct, said damper means being adapted to direct a stream of outside air either through said first and second condensers and to the outside or through said evaporator to said cold air duct with flow of a portion thereof to the outside.

2,755,362. REFRIGERATING APPARATUS. James W. Jacobs, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application Sept. 10, 1953, Serial No. 379,423. 7 Claims. (Cl. 200—140.)

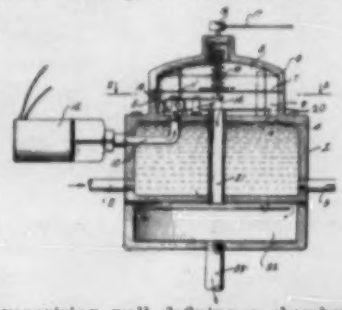


1. A control including a control means, an operating means operatively connected to the control means, a first contact means operatively connected to said operating means, a cooperating contact means located in the path of movement of said first contact means for cooperating with said first contact means to close an electrical circuit, friction means for normally holding said cooperating contact means whereever forced by engagement with said first contact means, said operating means having means effective in the direction of movement opposite that accomplished by the first contact means for engaging and moving said cooperating contact means toward the first contact means.

Week of July 24

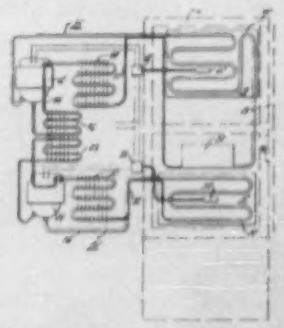
2,755,633. FUEL GASIFIER AND PRESSURE REGULATOR. Harry W. McClain, Long Beach, Calif, assignor, by direct and mesne assignments, to Hughes Carburetor Co., Inc., Oklahoma City, Okla., a corporation of Oklahoma. Application Dec. 10, 1954, Serial No. 474,456. 5 Claims. (Cl. 62—1.)

1. A fuel gasifier comprising a housing, heating means for said housing, a vaporizing wall forming one side of said housing, an inclosure on said



vaporizing wall defining a chamber, a fuel pipe extending from the outside of said housing and through said vaporizing wall and into the chamber, a hood within the chamber and positioned over the fuel intake pipe, said hood being open at the bottom thereof, a deflecting disc mounted within the chamber and spaced from the vaporizing wall, the open end of said hood being position to deflect fuel under said disc and against the vaporizing wall, and a fuel outlet pipe extending from the inclosure.

2,755,634. TWO-TEMPERATURE REFRIGERATING APPARATUS. Edward C. Simmons, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application Jan. 13, 1955, Serial No. 481,508. 9 Claims. (Cl. 62—4.)



1. In a refrigerator assembly having a first relatively low temperature frozen food storage chamber and a second relatively high temperature unfrozen food storage chamber, a first refrigeration system including a first evaporator in said first chamber and refrigerant liquefying means for supplying liquid refrigerant to said first evaporator, a second refrigeration system including a second evaporator in said second chamber, a receiver located in thermal exchange relationship with said first evaporator for storing liquid refrigerant for said second evaporator, a second refrigerant liquefying means for supplying liquid refrigerant to said receiver, and means for connecting said second evaporator, receiver and said second liquefying means in refrigerant flow relationship.

(To Be Continued)

Locker Plant Burns

CANTRIL, Iowa—Fire razed a locker plant owned by Guy McCullough and damaged adjoining buildings here recently.

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MOLDED PLASTIC-RUBBER PARTS
Show us a print of the molded part you need . . . we'll show you how to produce it . . . accurately and economically. Geauga's die design ability and molding production facilities assures prompt service at low cost.
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Rubber-to-steel molding in a variety of shapes available to your specifications.
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Contractor Sounds Off--

(Concluded from Page 1, Col. 4)

applied primarily to installations up to 100 tons of cooling capacity, Ford said that not only does the contractor complete plans and drawings, but will also specify the make, size, and model of equipment to be installed, even though a consulting engineer and architect may be engaged to provide plans for the job.

Cites Examples of 'Incomplete Service'

Ford cited the following as some of the examples of "incomplete service offered by architects and consulting engineers on installations of cooling equipment:

- Insufficient blueprints, equipment layouts, and piping diagrams are given to the contractor.
- On electrical power supply and wiring the information offered by consulting engineers and architects is sometimes only the statement "all electrical work shall comply with all codes that apply."
- In some instances a consulting engineer has specified that "if the equipment specified shall not prove large enough for the requirements to be met, the contractor will install sufficient additional equipment at his own expense."
- The contractor can't afford to provide accurate estimates and layouts on all bid opportunities that might come his way, yet he is called in after a bid from some other source is accepted and is expected to provide a satisfactory installation no matter how badly the architect or consulting engineer might be "off" on a job.
- In the refrigeration and air conditioning industry the contractor is expected to, and does, more "selling" of a particular job, and the particular equipment and components that go into a job, than in any other phase of construction work. And in many instances where the architect or consulting engineer may have specified certain equipment, the contractor may alter this later after he has entered into discussion with the buyer.

Complaints vs. Mfrs.

With the manufacturers, the veteran contractors issues these complaints:

- The guarantee or warranty by the manufacturer rarely means more than that the manufacturer will repair or replace defective materials or components at the factory. "But what about those instances where the contractor can spend — without exaggeration — as much as $500 of his own money to replace a defective part that may not cost much more than $5?" Ford asked.
- Much of the new equipment provided by manufacturers of cooling equipment has not been adequately field tested, and if tests have been made, the reports are often inadequate, and lacking in such fundamental information as geographic data, and the like.
- Capacity ratings and other types of equipment ratings are often unreliable. The contractor would have a lot more confidence in equipment if it were labeled that it had been rated in accordance with ASRE and ARI standards. Contractors are unable to have much confidence in the given ratings of manufacturers' equipment that they must apply to specific jobs. In most instances a "safety factor" must be added to a given rating, in the selection of equipment.

On the matter of equipment ratings which must be applied in the field, Ford cited the experience in the field of boiler equipment for heating systems. A number of years ago the situation was somewhat chaotic, but through the cooperative activity of contractors and manufacturers, rating standards were established, and a "boiler rating book" was developed, which gained such acceptance that the FHA uses it as a reference guide.

- Manufacturers could be of more assistance in the matter of proper timing for the arrival of equipment on a job. This is a multi-faceted problem, but one of importance to contractors because it costs money to use handling machinery for heavy equipment. A crane can cost as much as $125 a day, and if there is a delay of a few days it can run into a lot of money.

Other Major Problems

Other major problems facing the contractor, Ford said, include those of labor jurisdictional disputes. The question of who does what particular job among the steamfitters, pipefitters, plumbers, sheet metal workers, and riggers, can vary widely in a single metropolitan area.

In the matter of the contractors own installation crews, Ford said that development of good foremen can be the "contractor's best tool." He suggested as an approach to this that the contractor select a good young journeyman to work closely with the foreman with the idea of developing the younger man into foreman material.

"No product is better than the man who installs and services it," Ford stated.

In a discussion from the floor, Luke St. Onge, consulting engineer from York, Pa., made the case for the consulting engineer, pointing out that the good ones will properly size equipment, and provide correct layouts and piping diagrams. He made the point that the good consulting engineer can save money for both the buyer and contractor.

To this Ford agreed, but said that from his experience, this would be found only in some jobs over 100 tons.

Detroit ASRE To Hear About Absorption Units on Dec. 17

DETROIT—A technical discussion of the absorption refrigeration cycle and the absorption machine will be presented by Victor Cole, product specialist for the Machinery & Systems Div. of Carrier Corp. at a meeting of the Detroit section of the American Society of Refrigerating Engineers on Monday, Dec. 17.

Scheduled to begin at 8 p.m., the meeting will be held in the auditorium of the Engineering Society of Detroit in the Rackham Bldg.

Cocktails at 6 p.m. and dinner at 6:30 p.m. will precede the meeting. Dinner reservations should be made with Frank Drogosch, section secretary, before Dec. 13.

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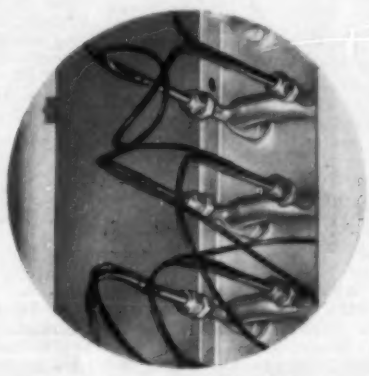
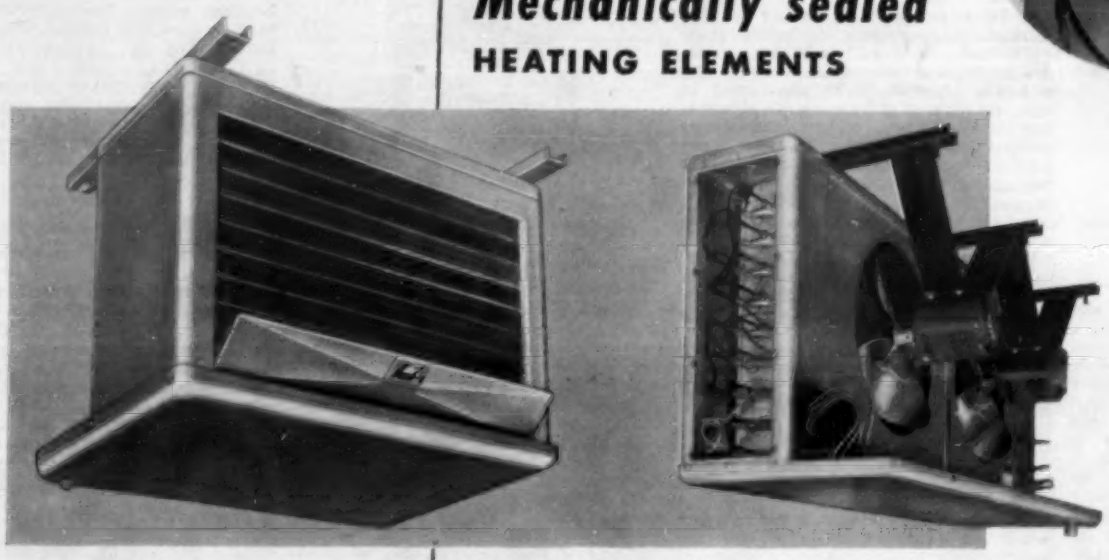
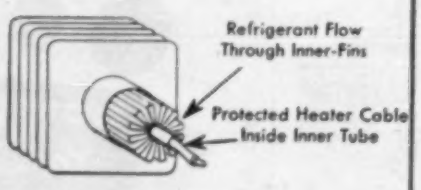




DRAIN PAN HEATING PAD

Conductive rubber electrical heating blanket provides quick, safe heat that prevents refreezing of water during defrosting. No heating wires . . . heating element is conductive rubber, hermetically sealed, shockproof and waterproof.



No defrost problems with these Dunham-Bush low temperature units! *Mechanically sealed* heating elements provide *positive* protection against entry of water into system. Defrosting is safe . . . sure . . . complete. And control kit (furnished) makes defrosting *entirely automatic.*

Inner-Fin® coil construction, exclusive with Dunham-Bush, permits units to defrost *from the inside.* Heat source for defrosting is a specially designed heater cable contained within the inner tube. Greater surface area which Inner-Fin construction provides assures rapid distribution of heat, quicker defrosting and minimum room temperature rise.

Units are available in capacities from 4500 to 36000 BTU/hr.

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